Forest Management Agreements

Five Year Review
1980-1985

November, 1985

Ontario
Ministry of Natural Resources
Hon. Vincent G. Kerrio
Minister
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Deputy Minister

Summary

The Ministry of Natural Resources has undertaken a policy of entering into Forest Management Agreements (FMAs) with major forest companies in the Province of Ontario. The FMAs replace existing licensing arrangements with an agreement which obliges the FMA holder to ensure forests on the agreement area are harvested and regenerated on a sustained yield basis.

The Crown Timber Act (Section 6) requires at the end of each term of five years of a Forest Management Agreement a report be laid before the Assembly "in respect of the relationship between harvest and growth, including regeneration, of timber during the said term on the area subject to agreement".

The Agreements are "evergreen". They have a period of 20 years made up of four five-year terms. The Forest Management Agreement (Section 15) requires the Minister to determine at the end of each term of five consecutive years whether or not the obligations of the company, under the management documents, have been satisfactorily performed. If such is the case, the Minister agrees to then extend the remaining period of the Forest Management Agreement a further term of five years.

This report presents an overview and individual reports of the five reviews undertaken by the Ministry of Natural Resources on the five Forest Management Agreements which have completed their fifth year of operation. It summarizes the various forest operations carried out by the five companies and presents the individual reviews for each company as provided by review committees for the following agreements:

1. Abitibi-Price Inc. - Iroquois Falls Forest
2. Great Lakes Forest Products Ltd. - English River Forest
3. E. B. Eddy Forest Products Ltd. - Upper Spanish Forest
4. E. B. Eddy Forest Products Ltd. - Lower Spanish Forest
5. Spruce Falls Power and Paper Co. Ltd. - Gordon Cosens Forest

The agreements oblige the agreement holder to develop plans and submit reports within a prescribed time frame, to harvest within the limits established through planning, to treat not satisfactorily regenerated (NSR) lands, to apply approved silvicultural treatments and to comply with certain requirements specific to the local areas.

The companies have met their obligations under the management documents, although optimistic harvest plans were not fully implemented. Subsequent road construction, regeneration, tending and silviculture, however, were consistent with the actual area harvested.

The companies were obliged collectively to treat 17,634 hectares of not satisfactorily regenerated (NSR or "backlog") land. They actually treated 67,188 hectares or 381 percent of the obligation.

The harvest from the FMA areas has increased 15 percent over the previous five year non-FMA term. At the same time regeneration has increased 43 percent on the FMA areas in the same term.

The recommendation of the reviews is to extend each Agreement for a further five years.

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Section 1

Five Year Review

INTRODUCTION

The objective of the forest management activity is to provide for an optimum continuous contribution to the economy of Ontario by the forest-based industry consistent with sound environmental practices and to provide for other uses of the forest. This involves promoting full utilization of the present allowable cut on Crown land and ensuring for the year 2020 an allowable harvest of 25.8 million cubic metres of wood.

In support of its objectives of resource development and resource conservation, Ontario has adopted a policy of entering into Forest Management Agreements.

The Crown Timber Act was amended in December,1979 to permit the Minister of Natural Resources, subject to the approval of the Lieutenant Governor-in-Council, to enter into Forest Management Agreements (FMAs) with private sector companies. FMAs cover a specific section of Crown land and grant companies the right to harvest timber on that land. While the Ministry provides certain funding, the companies are responsible for the construction of access roads and for all planning, regeneration and other silviculture activities which are necessary for proper forest management. As of November,1985, 26 FMAs have been executed covering a total of 145,357 square kilometres. This is 58 percent of the 248,577 square-kilometre licensed area in the province. A list of Agreements and their area is found in Appendix A.

The Crown Timber Act (Section 6) requires that at the end of each term of five years of a Forest Management Agreement a report be made to the Legislature "in respect of the relationship between harvest and growth, including regeneration, of timber during the said term on the area subject to agreement".

The Agreements have a period of twenty years made up of four five-year terms. The Forest Management Agreement (Section 15) requires the Minister to determine at the end of each term of five consecutive years whether or not the obligations of the company, under the management documents, have been satisfactorily met. If such is the case, the Minister then agrees to extend the remaining period of the forest management agreement a further term of five consecutive years. This is called an "evergreen" arrangement.

The Ministry of Natural Resources has undertaken reviews on the first five Forest Management Agreements as follows:

500200 Abitibi-Price Inc., Iroquois Falls Forest
500300 Great Lakes Forest Products Ltd., English River Forest
500400 E. B. Eddy Forest Products Ltd., Upper Spanish Forest
500500 E. B. Eddy Forest Products Ltd., Lower Spanish Forest
500600 Spruce Falls Power and Paper Co. Ltd., Gordon Cosens Forest

The location of these Agreements is shown in Figure 1.

These reviews were conducted by committees of Ministry staff, appointed from outside the region being reviewed. Each committee was headed by a senior Ministry administrator, assisted by a regional forester and a senior field staff person from the Outdoor Recreation program.

The committees assessed the commitment of the companies to their obligations, and complemented the normal Ministry processes of approval and audits, which deal with verification of work quality and quantity.

The committees reviewed written records, and carried out field inspections to ensure that the following were properly addressed:

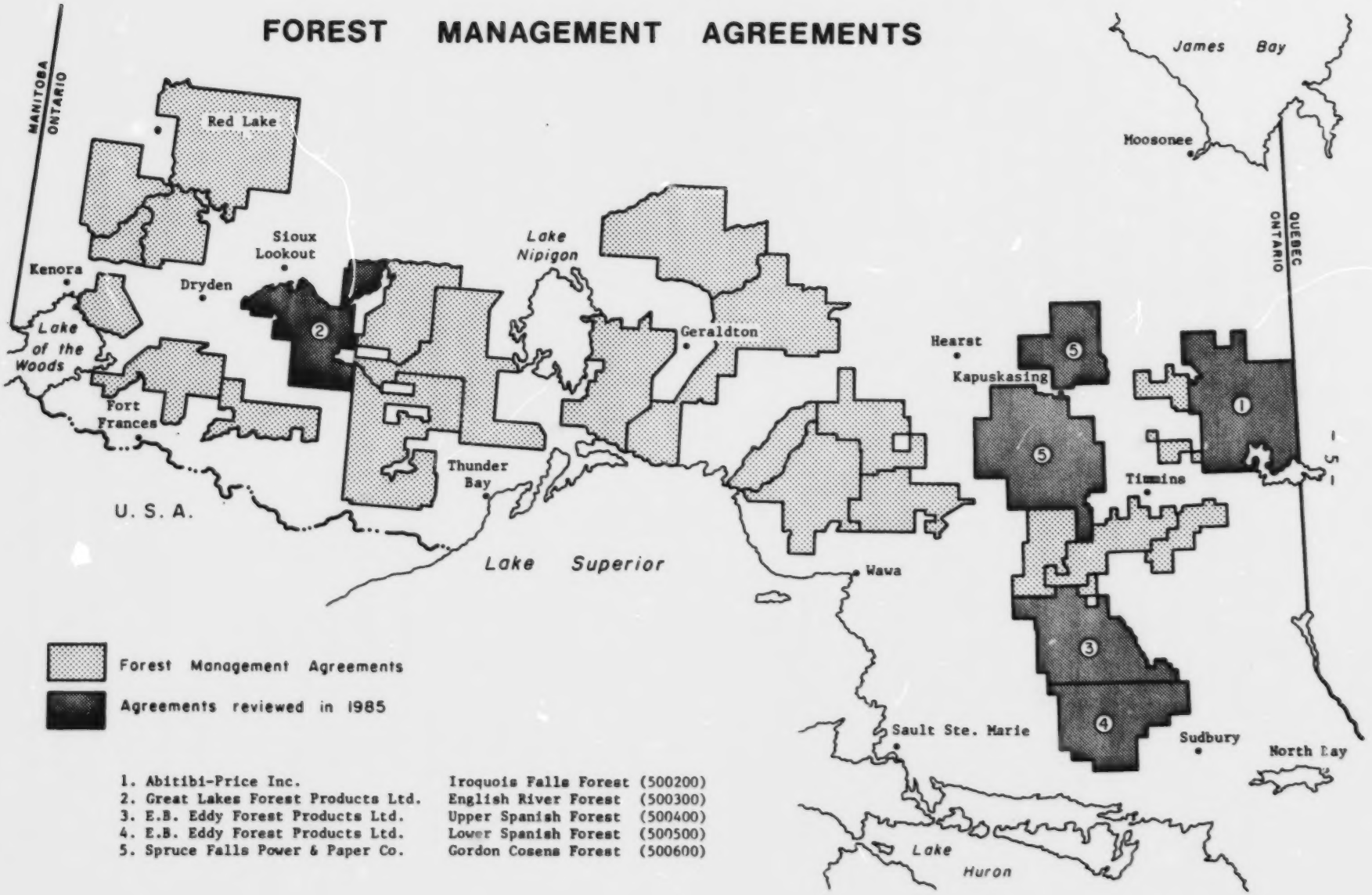


FIGURE 1
The geographic location of the five agreements under review and the other agreements in the Province. (November 1985)

1) company obligations for planning, harvesting, roads, silviculture;
2) surplus;
3) integrated resource management;
4) records;
5) company commitment;
6) company concerns.

The reviews presented are the first to be submitted under Legislation and,therefore,are significant in making public the results of forest management activities undertaken by the Forest Management Agreement holders.

SUMMARY OF COMMENTS

1) AGREEMENT OBLIGATIONS

The Agreement identifies obligations of the company, namely:

a) submission dates for management,operating and annual work schedules and reports are to be established and met;
b) harvest: may not exceed the maximum allowable depletion (annual allowable cut) and companies may be liable for damages following the fifth year if their planned requirements are not harvested;
c) objectives for treatment of not satisfactorily regenerated (NSR) lands are to be met;
d) compliance with ground rules which indicate the silvicultural treatments on a site-specific basis;
e) road construction.

In addition:

- a phase-in schedule during the first five-year term was established to allow for the orderly transfer of regeneration responsibilities from the Ministry to the companies; and
- the Agreement obliges the Minister to pay for

approved road construction, reconstruction and maintenance and for silvicultural work undertaken on the Agreement area by the Agreement holder.

The purpose of the Agreement is to ensure harvested areas are regenerated as specified on a sustained-yield basis. The management and operating plans submitted under the Agreement are statements of the proposed operations for the planning period. Annual work schedules set out the actual activities to be undertaken annually.

a) Plan and Report Submission

There were minor deficiencies associated with the timely submission of plans, particularly in the early years of the Agreements.

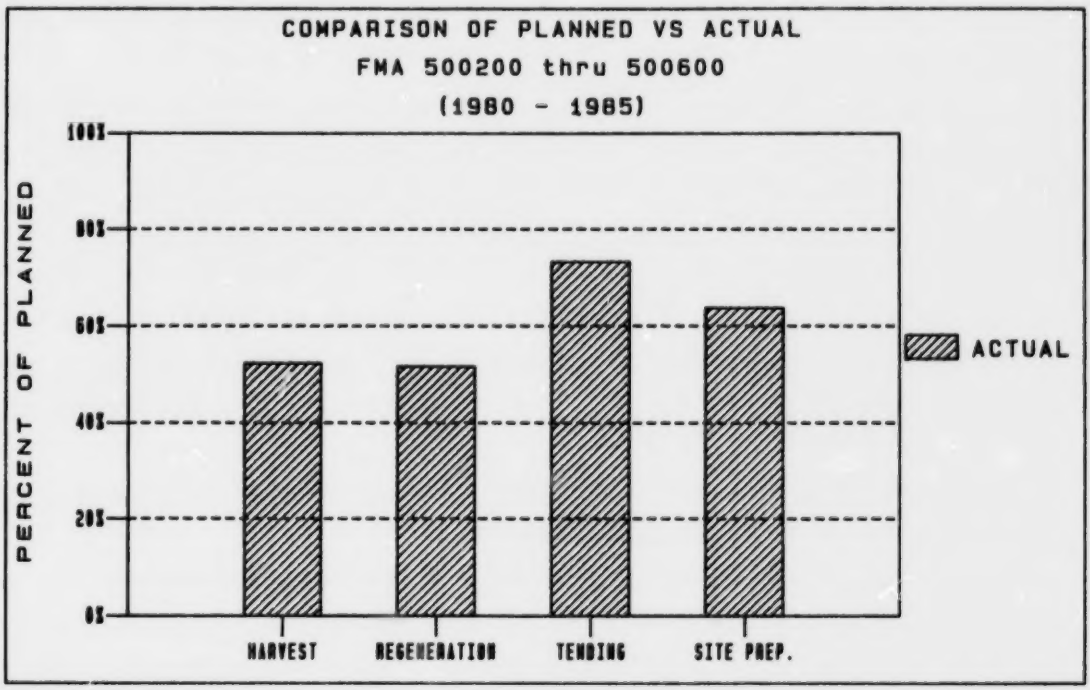
Late submissions of plans were attributable to startup problems with newly-acquired Ministry computer equipment and programs which were used to calculate maximum allowable depletions. The timing of all plan submissions was approved by the Ministry.

The Agreement requires annual reports to be submitted by each company at a specified time. The reports were consistent with company records and were submitted as required.

The planning documents identify the anticipated levels of silvicultural activity and road construction that are expected to occur on the FMA area. The operating plan estimates these activities for five years. These are implemented through annual work schedules which reflect the actual ground conditions encountered. Figure 2 shows a comparison of the actual achievements compared to the planned activities of harvest, regeneration, tending and site preparation. The 100 percent planned level is taken from

the operating plans written four years in advance of the implementation of management activities.

FIGURE 2
Comparison of the actual levels of harvest,regeneration tending and site preparation accumulated to 1985 and expressed as a percentage of the levels originally planned in the 1980-85 Operating Plan.



b) Harvesting

Difficulties were encountered in operating within 10 percent of the planned harvest cut. Fluctuating markets or mill modifications and non-applicability of liquidated damages were reasons the companies did not harvest their projected wood requirements, as required by the Agreement. The Agreement provides for liquidated damages to be assessed if harvest levels are not within 10 percent of those anticipated in the planning documents. Liquidated damages are stumpage fees, charged against the company,for wood which it estimates is required but does not harvest in the five-year operating period. This provision was not in

effect during the first five-year term.

In Ontario, maximum allowable depletion (allowable cut) is determined on an area basis. Each Forest Management Agreement has a maximum allowable depletion calculated which estimates the area available for harvest, natural depletions such as fire, insect or disease damage and permanent reserves or alterations to the land base.

Maximum allowable depletion is recalculated every five years based on the actual activities of the company both in harvesting and in regeneration, and on any other significant natural or other alterations to the land base.

For the five Agreements, in total, the maximum allowable depletion was 48 percent greater than the area indicated as required for company operations. The area actually harvested by the companies was 52 per cent of the forecasted harvest. This breakdown is shown by company in Table 1. The difference between the maximum allowable depletion and the stated requirements is termed surplus and is addressed on page 14.

TABLE 1

Maximum allowable depletion (allowable cut), forecast harvest and actual harvest for five agreement areas for 1980-1985.

Company and Forest Name		Total hectares (1980 - 1985) Maximum Allowable Depletion	Forecasted Harvest	Actual Harvest
500200	Abitibi-Price Inc. - Iroquios Falls Forest	53,950	38,535	21,064
500300	Great Lakes Forest Products Limited - English River Forest	34,265	30,486	22,100
500400	E.B. Eddy Forest Products Ltd. - Upper Spanish Forest	58,176	33,012	11,460
500500	E.B. Eddy Forest Products Ltd. - Lower Spanish Forest	53,685	31,061	1,871
500600	Spruce Falls Power and Paper Co. - Gordon Cosens Forest	104,185	72,525	51,248
	Total	304,261	205,619	107,743

c) NSR Lands

The Agreement has a requirement for the company to treat not satisfactorily regenerated (NSR) lands which existed at the signing of the Agreement. In each company's case, the obligation was substantially exceeded. A comparison of the obligation to the actual achievement is shown in Table 2. Collectively, the four Agreement holders treated 381 per cent of their obligation, mostly through aerial tending.

TABLE 2
Not Satisfactorily Regenerated (NSR) obligation and treatment for five agreement areas for 1980-1985.

	Company and Forest Name	NSR Obligation (hectares)	NSR Treated to date (hectares)
500200	Abitibi-Price Inc. - Iroquios Falls Forest	3,839	8,969
500300	Great Lakes Forest Products Limited - English River Forest	2,405	9,283
500400	E.B. Eddy Forest Products Ltd. - Upper Spanish Forest	695	5,981
500500	E.B. Eddy Forest Products Ltd. - Lower Spanish Forest	608	610
500600	Spruce Falls Power and Paper Co. - Gordon Cosens Forest	10,087	42,345
	Total	17,634	67,188

d) Silviculture

Silvicultural activities were implemented by all the companies in accordance with the Agreement requirements. In total the companies regenerated 48,121 hectares, tended 48,800 hectares and site prepared 47,546 hectares. A detailed summary of the companies' forest operations is found in Table 3. During the phase-in stage the Ministry implemented the following silvicultural activities: regeneration of 19,944 hectares, tending of 8,463 hectares and site preparation of 14,796 hectares. Table 4 shows the summary of Ministry and company activities.

The relative success of these operations is difficult to measure as most were less than five years of age which is the usual time for formal assessments. Field inspections indicated that the majority of regenerated areas were sufficiently stocked according to the Agreement requirements. Where, however, stocking was not sufficient,

TABLE 3
Detailed summary of companies' forest operations and ministry payments for 1980-85.(Ministry phase-in work not included)

FOREST MANAGEMENT AGREEMENT NO. 500500 to 500600

HARVEST CUT: 107743 HA

REGENERATION		HECTARES	DOLLARS (000)
TREATED			
PLANTING	i) BAREROOT	6215	1707.4
	ii) CONTAINER	14741	2843.8
SEEDING	i) DIRECT	10267	111.7
	ii) WITH SITE PREPARATION	5340	641.1
TOTAL, TREATED		36563	5304.0
NATURAL			
STRIP CUTTING		394	
SEED TREE CUTTING		4053	
CLEAR CUTTING		7131	
TOTAL, NATURAL		11558	
TOTAL, REGENERATION		48121	5304.0
TENDING			
CLEANING, CHEMICAL		686	(1)
AERIAL		48084	1711.7
OTHER		30	(1)
TOTAL, TENDING		48800	1711.7
SITE PREPARATION			
MECHANICAL		45837	7379.2
CHEMICAL		1398	17.7
PRESCRIBED BURN		311	6.5
TOTAL, SITE PREP.		47546	7403.4
ACCESS ROAD CONSTRUCTION AND RECONSTRUCTION		KILOMETERS	
	PRIMARY	629.67	
	SECONDARY	917.06	
	TOTAL	1546.73	28071.2 (2)
	MAINTENANCE	1929.07	771.6
	TOTAL		43261.9

* Does not include Ministry Phase-In operations.

(1) Costs included under Aerial Tending.

(2) Costs not separated.

TABLE 4
Summary of Ministry and Company forest operations on five agreement areas for 1980-1985.

		hectares
Total harvest		107,743
Regeneration	FMA holder	48,121
	Ministry	19,944
	Total	68,065
Tending	FMA holder	48,800
	Ministry	8,463
	Total	57,263
Site preparation	FMA holder	47,546
	Ministry	14,796
	Total	62,340

follow-up action had been planned by the companies in the planning documents. The Agreement requires company failures to be treated by the Agreement holders at their own expense.

In each case, the activities of the company as outlined in the management documents (ground rules) and inspected in the field, were found to comply with the Agreement requirements.

e) Road Construction

In all cases roads were constructed in accordance with approved planning documents. However, the amounts of road constructed were also below the level anticipated in the plans, again primarily due to underharvest but also to some extent to reduction in available Ministry funding. In total, the companies constructed or reconstructed 1546 kilometres of road and maintained 1929 kilometres. A summary of road construction and maintenance is shown in Table 5.

TABLE 5
Road construction,planned and actual,and maintenance for five agreements for 1980-1985.

		Road Construction (1980 - 1985) Total kilometers		
Company and Forest Name		Type	Planned	Actual
500200	Abitibi-Price Inc. - Iroquios Falls Forest	Primary -	65.80	56.29
		Secondary -	146.29	90.06
		Maintenance -	X	453.65
500300	Great Lakes Forest Products Limited - English River Forest	Primary -	19.30	45.18
		Secondary -	140.20	122.14
		Maintenance	X	348.59
500400	E.B. Eddy Forest Products Ltd. - Upper Spanish Forest	Primary -	31.15	38.76
		Secondary -	616.54	456.86
		Maintenance -	X	286.81
500500	E.B. Eddy Forest Products Ltd. - Lower Spanish Forest	Primary -	150.32	135.97
		Secondary -	434.78	176.90
		Maintenance -	X	211.41
500600	Spruce Falls Power and Paper Co. - Gordon Cosens Forest	Primary -	298.90	353.47
		Secondary -	51.50	71.10
		Maintenance -	X	628.61
	Total	Primary -	565.47	629.67
		Secondary -	1389.31	917.06
		Maintenance -	X	1929.07

Phase-in

Companies and the Ministry were obliged to a phase-in schedule of planting and site preparation work to transfer work originally done by the Ministry. All companies either met or exceeded their rates of phase-in.

Payments

Payments to companies for approved roading and silvicultural activities were made by the Ministry according to the rates and conditions established in the Agreement. A summary of payments made to the companies is found in Table 3.

2) SURPLUS

Each Forest Management Agreement holder is required to declare any surplus which may occur. Surplus is the mathematical difference between the area of maximum allowable depletion and the area indicated as required for company operations. In all cases, surpluses were declared as required. Where requested, companies complied with Ministry requirements to address utilization of the surplus.

3) INTEGRATED RESOURCE MANAGEMENT

Special operating conditions are usually requested by the Ministry through the planning documents to deal with other forest uses, environmental concerns and wildlife requirements. These conditions, such as altered cut patterns, controlled water crossings and restricted access have been implemented satisfactorily by the companies.

4) RECORD KEEPING

Record keeping is inherent in any proper management system and the Forest Management Agreements require all companies

to maintain effective record keeping systems. There are varied systems of records and levels of computerization but all companies have good continuous records of their achievements on the Agreement to date.

5) COMPANY COMMITMENT

The Review Committees assessed commitment by the companies to the Forest Management Agreement program. In all cases the companies were very strongly committed to forest management under the Agreements. Additional staff have been directed to the FMAs either within the company organizations or have been hired from outside. The companies have combined, in various ways, the activities and responsibilities of planning, harvesting and regeneration. The reporting relationship within companies in matters dealing with the Forest Management Agreements is generally through senior management levels. The achievement levels of the companies in the areas of regeneration, tending and site preparation as shown in Figures 3, 4 and 5 indicate a marked increase over the amount of work previously carried out by the Ministry on the same area. Table 6 indicates the harvest in the five year term prior to the FMA was 93,518 hectares. In the first five years of the FMA harvesting increased 15 percent to 107,743 hectares. In the same period, regeneration increased 43 per cent, tending 285 per cent and site preparation 30 per cent over the areas treated in the previous five years.

Over the first five years of the Agreement, the companies have developed new techniques to deal with the challenge of managing both harvest and regeneration.

Great Lakes Forest Products Limited has converted a number of harvesting machines capable of site preparation on areas which were previously difficult to reforest with conventional equipment. Abitibi-Price and Spruce Falls have invested in special wide-tired harvesting equipment

FIGURE 3

Comparison of regeneration initiated annually prior to signing the FMA's in 1980-81 to regeneration initiated by the Companies and the Ministry following signing.(1978 and 1981 were fire years and large amounts of aerial seeding were done)

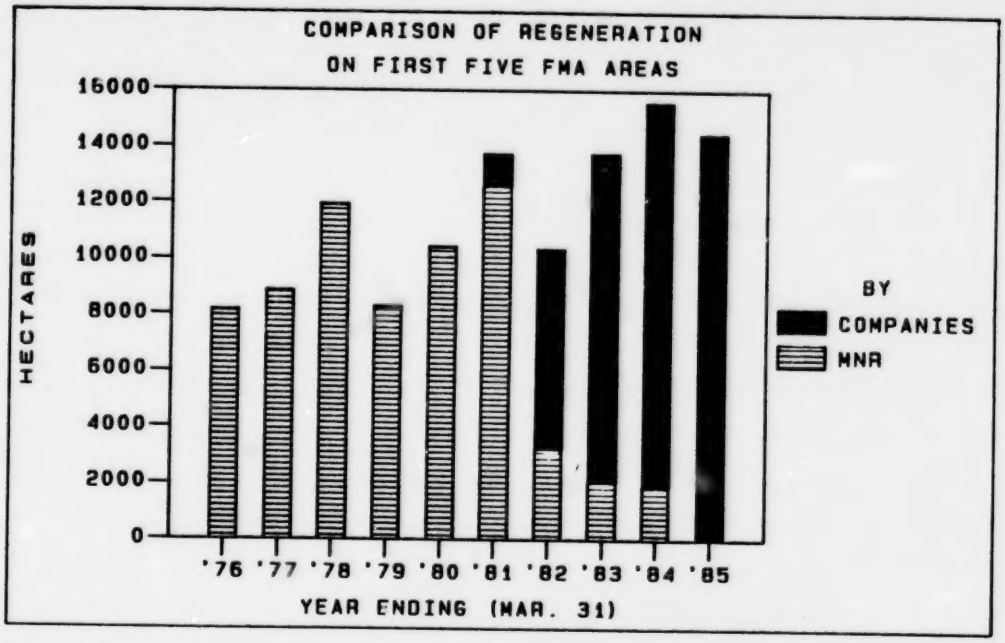


FIGURE 4

Comparison of tending initiated annually prior to signing the FMA's in 1980-81 to tending initiated by the Companies and the Ministry following signing.

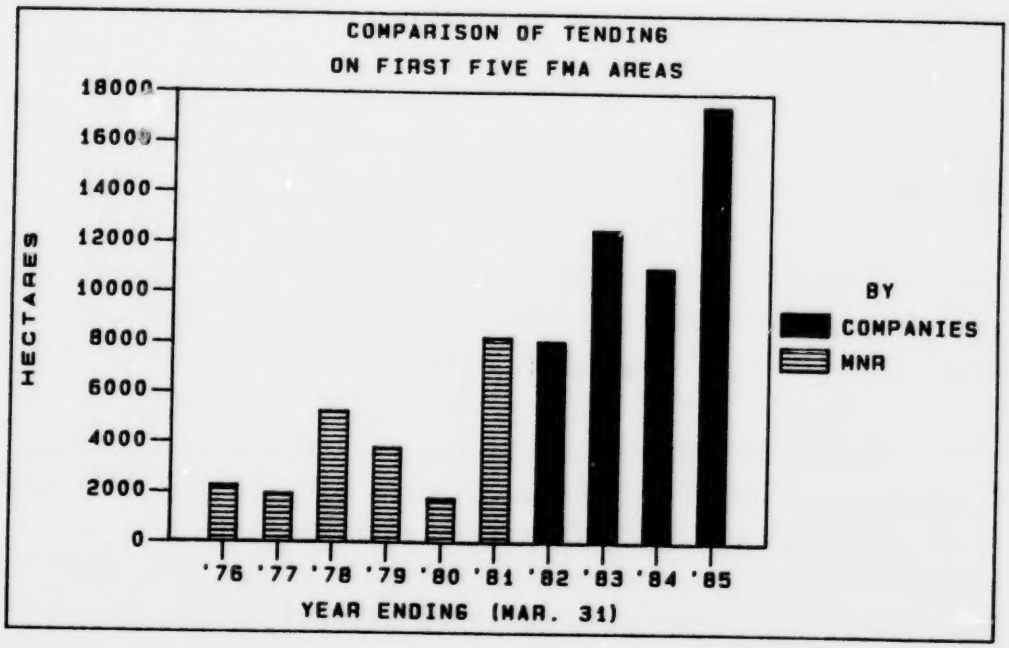


FIGURE 5
Comparison of site preparation initiated annually prior to signing the FMA's in 1980-81 to site preparation initiated by the Companies and the Ministry following signing.

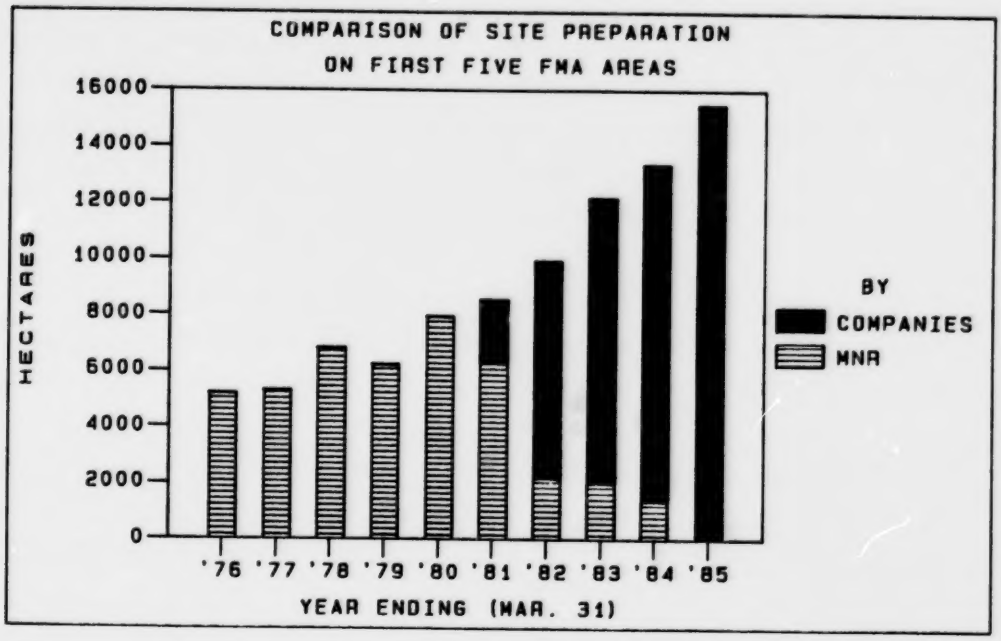


TABLE 6
Ten years of foresrty operations on five agreement areas before and after signing FMA's.

	hectares		
	Ministry Prior to Agreement 1976 - 1980	Company and Ministry Following Agreement 1981 - 1985	Percentage Increase
Harvest	93,518	107,743	15
Regeneration	47,702	68,065	43
Tending	14,840	57,267	285
Site Preparation	47,702	62,340	30

which minimizes site damage in the summer, increases utilization and enhances the regeneration effort which follows. E. B. Eddy is replacing undesirable hardwood species such as poplar and birch, on harvested sites, with softwood plantations in areas that normally could have been prescribed for natural regeneration of hardwood.

6) COMPANY CONCERNS

The Review Committees requested the companies to bring forward any concerns dealing with the FMA program. These are summarized as follows:

1. concern over planting container type and quality of planting stock provided either by the Ministry or through private growers;

2. concern over the detail required by the Ministry in the planning documents;

3. concern over the Province's future ability to fund the FMA program in its present form;

4. concerned about putting intensive regeneration efforts on all harvested lands. Companies advocate putting effort closer to the mill, because of the impact of transportation costs, and on more productive lands because of potentially higher yields. They indicate that, in the future, a large portion of the wood requirements will come from managed stands with very little from natural regeneration since the production from managed stands can potentially be at least double current levels. There is a need to focus on prime sites and to concentrate the regeneration effort where the greatest return can be realized;

5. desire to streamline the payment process and move to a single payment for management which would include road construction and maintenance, regeneration, and tending and

site preparation;

6. desire by certain companies to produce their own nursery stock or to make direct arrangements with private growers;

7. concern over under-harvesting stated company requirements by more than 10 percent and being in the position of having to pay liquidated damages in subsequent terms;

8. a feeling that the issue of responsibility of costs for removing roads or closing off roads to enhance or protect resources should be addressed;

9. a feeling that there is a very strong requirement to continue the use of approved herbicides in order to control competing vegetation;

10. concern over insect infestation and the damage to timber crops.

RECOMMENDATIONS

The following recommendation is made for all five Agreements:

1. That each company is satisfactorily meeting its obligations, in a businesslike and committed manner, and, therefore that an extension be made to each Agreement for a further five years.

The individual Reviews also make recommendations in respect to improving the administrative and operational aspects of the FMA program. These pertain to certain companies and the Ministry and are summarized below:

1. that the companies undertake to participate in more research and development in the pursuit of minimizing the

risks in the aerial seeding of jack pine, and in selecting the optimum chemical for controlling weeds and other competing species while minimizing the adverse effects on commercial tree species;

2. that the Ministry and industry should resolve the issue of payment for removing or gating roads to enhance or protect resources for the benefit of other forest users;

3. that the industry should be fully apprised and involved in aspects of the current insect infestations, from survey methods and results to public involvement;

4. that the Ministry records of all Ministry silvicultural work be reconciled by the Districts and transferred to the companies, including the status of NSR areas which the Ministry has treated;

5. that the Ministry remove itself from maintaining duplicate project records and only retain summaries of work accomplished to substantiate payments;

6. that free-to-grow assessments on Ministry areas be accelerated by the Ministry and the resultant information be fed into maximum allowable depletion calculations;

7. that an amendment procedure be put into place for correcting discrepancies recorded in Annual Reports when the official record must be changed for legitimate reasons;

8. that the Ministry and companies should continue to address each other's roles and responsibilities on a land base serving many users, as well as the related economic question of where best to invest FMA funding;

9. that the administrative role of the "Designated Crown Representative" be reviewed by the Ministry where necessary;

10. that companies be encouraged to use prescribed burning as a site preparation technique where it is not currently in operational use;

11. that the Ministry review, in further detail, road plans that involve approved third party arrangements.

Section 2

Individual Reviews

Five Year Review

Abitibi-Price Inc.
Iroquois Falls Forest
Agreement 500200
1980-85

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REPORT ON FIVE YEAR REVIEW

ABITIBI PRICE FMA 500200

Introduction

In accordance with Section 15 of Forest Management Agreement No. 500200 between the Minister of Natural Resources and Abitibi Price Inc., a Review Committee was appointed to determine whether or not the Company had met its obligations satisfactorily under the terms of the management documents.

The Committee was composed of:

Mr. W. C. Stevens, Regional Forester, Northeastern Region, Sudbury
Mr. G. Winterton, Regional Biologist, Northwestern Region, Kenora
Mr. D. E. McHale, Deputy Regional Director, Northern Region, Timmins. (Chairman)

The Committee operated out of Iroquois Falls, reviewing records, interviewing Company staff in both office and field locations throughout the Agreement area during the period August 19 - 23, 1985, inclusive.

Agreement Requirements

The Agreement identifies obligations to be undertaken by the Company including submission dates for management, operating and annual plans, objectives for treatment of Not Satifactorily Regenerated (NSR) lands, compliance with ground rules, and other special obligations.

Questioning of Company staff identified minor deficiencies which could be characterized as follows:

a) late submission of plans particularly in the early years of the Agreement;

b) compliance difficulties for the Company in the Agreement itself, e.g. Section 8.

Late submissions are attributable to normal start-up problems such as with allowable cut calculations by the Ministry which resulted in failure to get plans submitted on time particularly in the first two years of the Agreement. Late submission dates were approved by the Ministry.

In the case of compliance problems with Section 8 - Annual Allowable Cut, the Company experienced difficulties in harvesting between 90 - 100 percent of the indicated requirements in the planning documents. Fluctuating markets made it difficult for the Company to project wood requirements five years in advance and thus comply with the requirement of Section 8 which requires approval of the Minister to harvest less than 90 percent of the requirements stated in the planning documents.

It was evident in discussion with Company staff that they were very much aware of their obligations. Whenever difficulties were encountered efforts were made to overcome problems through discussions with local Ministry staff. In general the deficiencies were minor and were outweighed by the many obligations in the Agreement the Company did achieve.

Planned vs Actual Activities

Harvest

On an area basis, the Maximum Allowable Depletion established for this forest is approximately 53,950

hectares. The harvest planned by the Company in the management documents was approximately 38,535 hectares and the actual harvest for the same period was under 21,064 hectares or about 54 percent of the projected cut. A significant downturn in the marketplace was identified as the major factor for this undercut.

Roads

The Operating Plan for the five year period of the Agreement provided for the construction of 146 kilometres of primary and secondary roads. Actual construction achieved 69 percent of the target. As with the harvest, there was a reduced requirement for roads thus the planned target was not achieved. There were also Ministry reductions in the funding available for road construction.

The following is a summary of planned and actual road construction and maintenance:

TABLE 1
Summary of the amount of road originally planned and the amount actually constructed for the 1980-85 Operating Plan period. Maintenance is done annually.

	Kilometers	
Road Type	Planned	Actual
Primary	65.80	56.29
Secondary	146.29	90.06
Maintenance		348.59

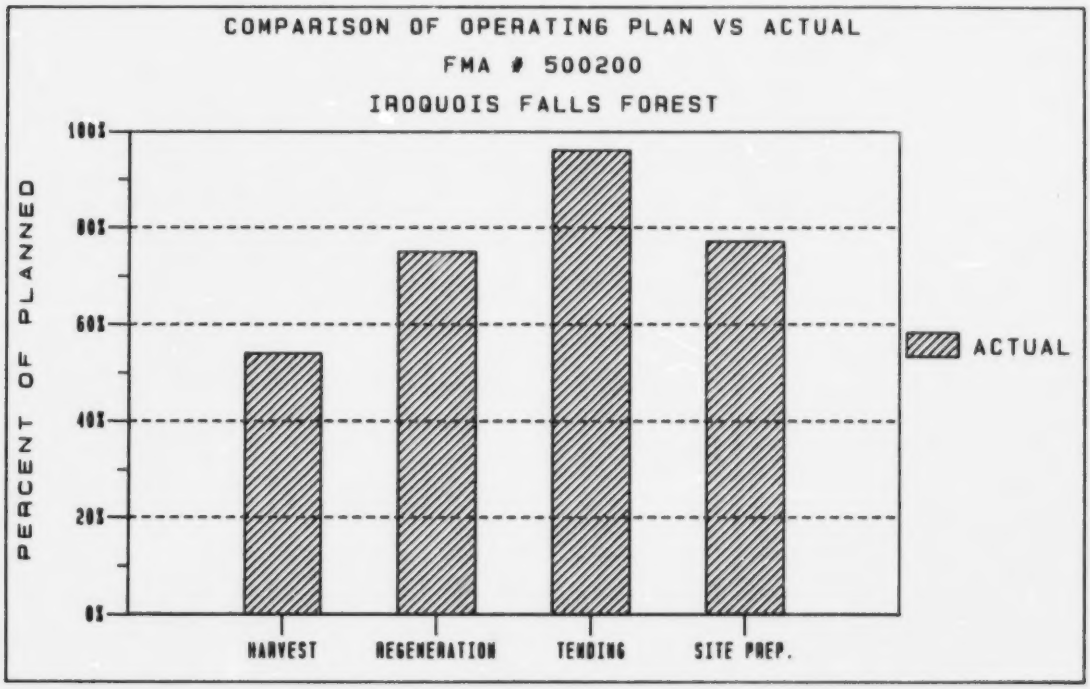
Silviculture

The Company entered into the Agreement with obligations to treat certain NSR lands cut prior to 1980 and requiring treatment. There was also a phase-in period to allow the Company to gradually assume the full silviculture load over

the first five years of the Agreement and treat the current cutover area.

The obligations of treating NSR lands was 3,839 hectares, mainly comprised of tending, and was over-achieved by 234 percent for a total of 8,969 hectares.

FIGURE 1
Comparison of the actual levels of harvest, regeneration, tending and site preparation accumulated to 1985 and expressed as a percentage of the levels originally planned in the 1980-85 Operating Plan.



For the current period (1980-85) achievements are compared to planned regeneration, site preparation, and tending activities in Figure 1. It should be recognized that the original targets were based on a much higher planned harvest level, thus the achievements are commendable. The Company's harvest and silvicultural activities are summarized in Table 2. The most significant under-achievement was in

natural regeneration to be achieved by the technique of block cuts and group seed trees followed by site preparation for natural seeding. Results of this technique have been poor partly due to the lack of a good seed year during the past nine years, mainly as a result of spruce budworm infestation. The Company has declined to include this technique in the Ground Rules for the next operating period because of the low probability of success to date.

TABLE 2
Detailed summary of company's forest operations and ministry payments for 1980-85.(Ministry phase-in not included)

FOREST MANAGEMENT AGREEMENT NO. 500200
ABITIBI PRICE INC. IROQUOIS FALLS FOREST

HARVEST CUT: 21064 HA

REGENERATION		HECTARES	DOLLARS (000)
TREATED			
PLANTING	i) BAREROOT	298	89.6
	ii) CONTAINER	8715	1695.2
SEEDING	i) DIRECT	0	
	ii) WITH SITE PREPARATION	0	
TOTAL, TREATED		9013	1784.8
NATURAL			
STRIP CUTTING		86	
SEED TREE CUTTING		254	
CLEAR CUTTING		62	
TOTAL, NATURAL		402	
TOTAL, REGENERATION		9415	1784.8
TENDING			
CLEANING, CHEMICAL		0	
AERIAL		10491	601.5
OTHER		30	(1)
TOTAL, TENDING		10521	601.5
SITE PREPARATION			
MECHANICAL		11546	2029.8
CHEMICAL		315	(2)
PRESCRIBED BURN		0	
TOTAL, SITE PREP.		11861	2029.8
ACCESS ROAD CONSTRUCTION AND RECONSTRUCTION		KILOMETERS	
	PRIMARY	56.29	
	SECONDARY	90.06	
	TOTAL	146.35	3025.8 (3)
MAINTENANCE		453.65	173.0
TOTAL			7614.9

* Does not include Ministry Phase-In operations.

(1) Costs included under Aerial Tending.

(2) Costs included under Mechanical Site Preparation.

(3) Costs not separated.

Field Examination

Two days of field examinations via helicopter and car provided opportunities to view examples of regeneration techniques and results covering the five years' road locations, bridge construction techniques, shoreline reserves, moose blocks and harvesting techniques.

Construction techniques, e.g. bridges and roads are undertaken with care and do not appear to have adversely impacted upon the natural environment. Block cuts, including the moose concentration and lakeshore reserves conform to Ministry requirements. For the many regeneration projects viewed, survival rates for the first two-year assessments ranged from the low 80's to the high 90's. The older plantings were rapidly reaching free-to-grow status. The results, both in survival and growth were very gratifying. The success of the herbicide "Roundup" was very evident and an integral part of the tending program, particularly on the more productive sites where competition is a serious impediment to achieving free-to-grow status.

Management Obligations

Through Management and Operating Plans and Annual Work Schedules, the Company undertakes obligations to achieve both short term and long term objectives relative to the maintenance and improvement of the productivity of the forest. These include annual harvesting and regeneration plans, road location activities, etc. Comparing the planned to the actual showed a close correlation and in most cases the deviations were the result of reduced size of operation, i.e. cut less area than planned.

Longer term objectives are also being addressed including the improvement of poplar utilization (a study and resultant proposal is currently under review within the Company); the

improvement of genetically improved seed through Company participation in the Ontario Tree Improvement Council and the development of improved harvesting techniques such as the high flotation skidder which significantly reduces site damage.

Maintenance of Productivity

The Forest Management Agreement obligates the Company to produce successive crops of timber on a sustained yield basis. Table 3 shows a comparison of the Maximum Allowable Depletion during the first five year term of the Agreement and lists the harvest, depletion and regeneration efforts. The Maximum Allowable Depletion for the next five year term is also shown. Normally the Allowable Depletion is expected to drop as the overmature portion of the forest is fully harvested or depleted. If the full Allowable Depletion is not depleted it will remain at the same or higher levels in subsequent terms.

TABLE 3
Comparison of the 1980-1985 allowable cut, total depletion, harvest and regeneration activities and the 1985-1990 allowable cut. (Ministry Phase-In operations included.)

FOREST MANAGEMENT AGREEMENT NO. 500200

ABITIBI-PRICE INC.

1980 to 1985

(hectares)

Working Group or Forest Unit	1980-1985 Maximum Allowable Depletion	Total Depletion	Harvest	Regeneration Total	1985-1990 Maximum Allowable Depletion
Spruce,1	12584	6668	6648		12498
Spruce,2	20784	8394	8327		20680
Spruce,3	3643	150	141	N	3698
Balsam Fir	2375	1051	1051	/	2202
Poplar	8225	2227	2227	A	8416
White Birch	3535	1207	1207		3413
Jack Pine	2805	1463	1463		2813
Total	53951	21160	21064	13871	53720

Surplus

According to the harvesting performance in the first five years, the Company has cut 39 percent of the calculated allowable cut, 55 percent of their stated requirements. Their projections for 1986 to 1990 are a planned cut equal to that of 1980 to 1985. If the actual cut by the Company is at its anticipated levels for the next five years, there will be area surplus to the Company's requirements. The Company indicated concerns about this calculated surplus as at the present time they purchase approximately 50 percent of their mill requirements and are subject to a variability of market conditions. All of these factors have the potential to alter the mill requirements on an annual basis or impact on the wood supply area required. The Company indicated that surplus should be viewed with these above caveats to put it into perspective before disposition is considered by the Minister under Section 9 of the Agreement.

Integrated Resource Management

The Company has responded to requests by the Ministry in terms of reserves, road location, bridge crossings and layout and cutting of forest to accommodate other resource concerns. Field examination showed conformance to requests and good site protection practices.

Records

The Company has an excellent record system which includes extensive use of computers. For each request made by the review team, maps of roads, silvicultural treatments showing planned and actual were readily provided. Road construction records were equally detailed and provided good documentation. Integration of silviculture and financial records is accomplished through the use of the same project maps for both sets of records. Thus, what was done in the field was the same as that submitted for payment to the Ministry. Overall, this is an excellent system that the Ministry should investigate as a model.

Company Commitment

Based upon responses during the review and field examination relative to stated objectives and targets, the Company is clearly committed to the FMA and to making it succeed. Upon entering into the FMA, the Company increased their staff by five and indicate if the level of Company operations increases, so will the the staffing levels. The Company has undertaken extensive training programs, including the development of manuals, to train existing staff, thus expanding the focus of their jobs from wood production to silvicultural aspects. Their efforts at developing and modifying regeneration techniques, harvesting techniques and efforts in improving technology, combined with those aimed at improving staff capabilities, attest to their commitment.

Company Concerns

Section 8 of the Forest Management Agreement requires the Company to harvest a minimum 90 percent of their requirements as forecast in the Operating Plan. The Agreement further provides for the payment of liquidated damages by the Company for the difference between actual harvest and 90 percent of the forecast harvest.

The liquidated damages provision did not apply in the first five year term of the Agreement but comes into effect for the second and subsequent five year terms. The Company expressed concern that the unpredictability and variability within the market could make effective compliance with Section 8 difficult.

The question of treating all harvested lands needs to be reviewed. The Company advocates putting effort closer to the mill because of the impact of transportation costs and on more productive lands because of potentially higher yields. They indicated that in the future, 80 percent of wood requirements would come from managed stands and 20 percent from natural regeneration and also that production from these managed stands could potentially be at least double current levels.

Ministry Concerns

The basic issue of what the land base is to be used for is of concern to both the Ministry and the Company. From a Company point of view their objective is to grow wood for the mill. Additionally, the Ministry sees the land base providing other benefits. So long as these other user impacts such as wildlife, fisheries and tourism do not result in significant increases in wood production costs or losses of wood production areas the Company is very

co-operative. There is, however, potential for disagreement. At present, the Company is not being fully compensated for costs, and they do not expect to be but compensation for some activities, e.g. site preparation, has increased by 39 percent (inflation allowance) and actual costs are up 130 percent over the past five years. As wood production costs go up, receptivity to costs attributable to other uses will likely lessen.

There is an emerging issue of how much of the land base is to be treated in order to maintain the viability of the Company plants supplied off the agreement area. If one half to one third of the forest area, through intensive management, will produce the same volume as the total area does at present, then there is an argument to concentrate regeneration on the better sites and leave the poorer sites to return to production naturally.

In summary, there is need to continue the dialogue to develop a clearer understanding of the role and responsibilities of the Company and the Ministry on a land base serving so many users, as well as the economically related questions of where to best invest regeneration dollars.

Recommendations

1. The Company has met its obligations under the Agreement. Therefore it is recommended that the Agreement be extended for a further five years.

2. The Ministry should investigate the Company's record system in detail and remove itself from maintaining duplicate project records.

3. The Company and Ministry should continue to address each other's roles and responsibilities on a land base serving many users, as well as the related economic questions of where to best invest FMA funding.

Five Year Review

Great Lakes Forest Products Ltd.
English River Forest
Agreement 500300
1980-85

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1. Introduction

The concept behind the Forest Management Agreement (FMA) is that the forest industry will take on the forest management responsibilities for a given area or a piece of land. The primary objective of the F.M.A. was that the responsible company would manage the land base in order to provide for a continuous supply of forest products from the F.M.A. area for its plants and ensure the forests on the F.M.A. area are harvested and regenerated on a sustained yield basis. The task of the Review Committee therefore was to determine if Great Lakes Forest Products Ltd. had satisfactorily met its obligations under the Agreement.

1.1 The Review Committee

To carry out this assessment, the following Review Committee was appointed:

Dr. M. Klugman, Regional Director, Northeastern Region (Chairman)
Mr. T. Isherwood, Regional Forester, Northern Region
Mr. R. Thompson, Regional Biologist, North Central Region

1.2 Tasks of the Review Committee

The main tasks of the Review Committee were to ascertain if:

-the productivity of the land base was being maintained;
-all terms and conditions of the original agreement were being met;
-all conditions of the planning documents were being

implemented;
-Great Lakes Forest Products Ltd. had taken on full responsibility for managing the English River Forest;
-the Company had committed its operations to integrated management of the land base;
-the Company had put in place an acceptable record-keeping system.

In addition the Review Committee was to make any appropriate observations and note any Company concerns.

2. Procedure

The Review Committee addressed its tasks in the following manner.

2.1 Agreement Defaults - Were There Any?

2.2 Agreement Requirements

The following was undertaken to determine whether the Company had met its Agreement requirements.

The Review Committee:

- reviewed the Management Plan for submission adherence;
- reviewed the Operating Plan for submission adherence;
- reviewed the Annual Plans for completeness and accuracy;
- reviewed the Annual Reports for completeness and accuracy;
- determined whether the special terms and conditions in the ground rules had been met and adhered to;
- examined whether the Company had met its obligations with regard to regenerating land classed as Not Satisfactorily Regenerated (NSR land).

2.3 Records Systems

The Review Committee reviewed the Company's record-keeping

systems (depletion, silviculture, accounting, etc.) for completeness and accuracy.

2.4 Company Commitment and Organization

The Company's organizational structure was examined and discussed with senior members of the Company.

2.5 Field Trip

A two day field trip was undertaken in order to assess silviculture, road construction, areas of concern and other forest uses in full operation.

3. Findings

3.1 Agreement Commitments

The Company was not found to be in default of any of its commitments:

Plans were submitted on time and approved within agreed upon time frames; year-end reports were accurate and on time; the Company actually over accomplished its phase-in requirements. In other words, Great Lakes Forest Products Ltd. took over their management responsibilities sooner than need be; the Company's NSR commitment for 2405 hectares for the five year period was met. The Company over accomplished its NSR commitment, however two major fires in 1976 (Ignace 7 and 17) within the Agreement area contributed to the total. Total NSR treatment was 9283 hectares. This was 273 percent in excess of the obligation.

3.2 Planned Versus Actual Activities

3.2.1 Harvest

The Maximum Allowable Depletion (allowable cut) for the English River Forest for 1980-85 was 34,365 hectares. In 1980-81 the Company forecast a depletion of 30,486 hectares. The actual harvest was 22,100 hectares, or 72 percent of the planned depletion. The actual depletion was 27,641 hectares or 90 per cent of planned. This underutilization was primarily due to a downturn in the economy and a resultant decrease in mill demand.

3.2.2 Roads

Great Lakes Forest Products Ltd. has put in place a well planned and designed access system in the English River Forest during the five year period. The planned versus implemented access program in the five year operating period appeared to the Review Committee to be realistic for the size of the Unit. (Table 1)

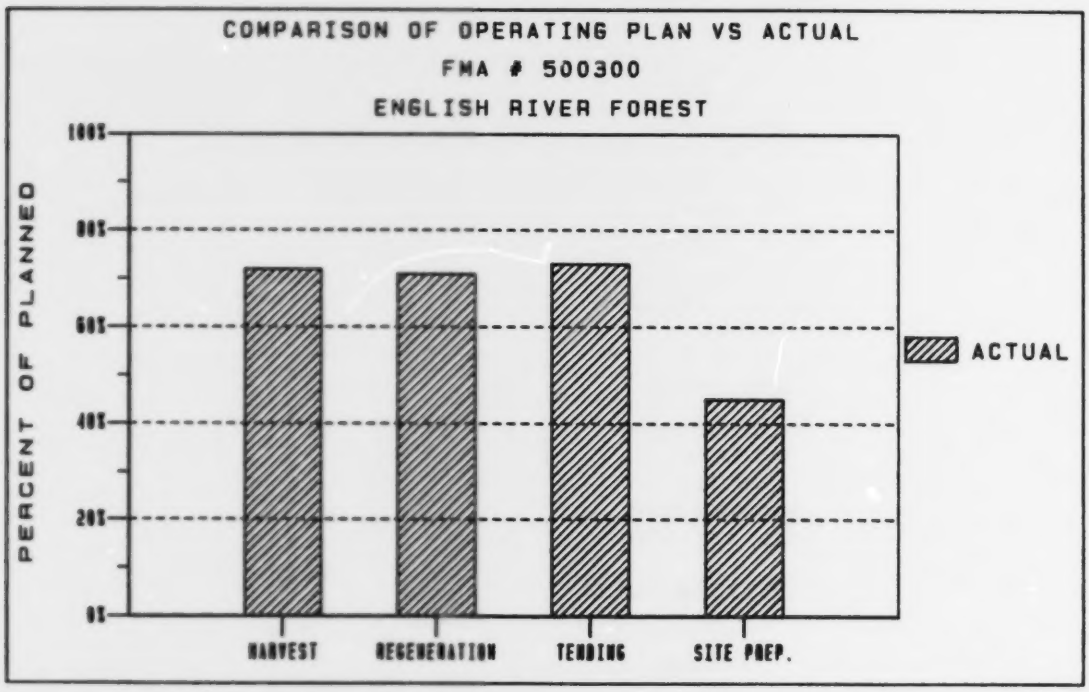
TABLE 1
Summary of the amount of road originally planned and the amount actually constructed for the 1980-85 operating period. Maintenance is done annually.

	Kilometers	
Road Type	**Planned**	**Actual**
Primary	19.3	45.18
Secondary	140.2	122.14
Total	159.5	167.32
Maintenance	-	348.59

The Company invoiced the Ministry for high quality primary and secondary roads. Therefore, the intent of the F.M.A. access program was adhered to in the English River Forest.

3.2.3 Silviculture

FIGURE 1
Comparison of the actual levels of harvest, regeneration, tending and site preparation accumulated to 1985 and expressed as a percentage of the levels originally planned in the 1980-85 Operating Plan.



The Company's actual depletion was 90 percent of that planned. Silvicultural activity was proportionate to the level of harvest as shown in Figure 1 with the exception of site preparation due to the availability of harvested area. The Company's total activities in silviculture are found

in Table 2. The Company regenerated 14,502 hectares, tended 1,193 hectares and site prepared 10,299 hectares between 1980-85. When compared to annually scheduled operations, which reflect actual ground conditions, the Company achieved over 80 percent of their objective.

TABLE 2
Detailed summary of company's forest operations and ministry payments for 1980-85.(Ministry phase-in not included)

FOREST MANAGEMENT AGREEMENT NO. 500300

GREAT LAKES FOREST PRODUCTS LTD. ENGLISH RIVER FOREST

HARVEST CUT: 22100 HA

	HECTARES	DOLLARS (000)
REGENERATION		
TREATED		
PLANTING i) BAREROOT	456	89.2
ii) CONTAINER	1234	255.7
SEEDING i) DIRECT	7319	57.8
ii) WITH SITE PREPARATION	5340	641.1
TOTAL, TREATED	14349	1043.8
NATURAL		
STRIP CUTTING	308	
SEED TREE CUTTING	56	
CLEAR CUTTING	89	
TOTAL, NATURAL	453	
TOTAL, REGENERATION	14802	1043.8
TENDING		
CLEANING, CHEMICAL	0	
AERIAL	1193	29.4
OTHER	0	
TOTAL, TENDING	1193	29.4
SITE PREPARATION		
MECHANICAL	10299	1097.9
CHEMICAL	0	
PRESCRIBED BURN	0	
TOTAL, SITE PREP.	10299	1097.9
ACCESS ROAD CONSTRUCTION AND RECONSTRUCTION	KILOMETERS	
PRIMARY	45.18	
SECONDARY	122.14	
TOTAL	167.32	2044.5 (1)
MAINTENANCE	348.59	139.0
TOTAL		4354.6

* Does not include Ministry Phase-In operations.

(1) Costs not separated.

3.3 Maintenance of Productivity

The Forest Management Agreement obligates the Company to

harvest and regenerate the Forest in such a manner as to produce successive crops of timber on a sustained yield basis. Table 3 shows a comparison of the Maximum Allowable Depletion during the first five year term of the Agreement and lists the harvest, depletion and regeneration efforts. The Maximum Allowable Depletion during the next five year term is also shown. Normally the Maximum Allowable Depletion is expected to drop as the overmature portion of the forest is fully harvested or depleted. If the Maximum Allowable Depletion is not depleted it will remain at the same or higher levels in subsequent terms.

TABLE 3
Comparison of the 1980-1985 allowable cut, total depletion, harvest and regeneration activities and the 1985-1990 allowable cut. (Ministry Phase-In operations included.)

FOREST MANAGEMENT AGREEMENT NO. 500300

GREAT LAKES FOREST PRODUCTS LIMITED

1980 to 1985

(hectares)

Working Group or Forest Unit	1980-1985 Maximum Allowable Depletion	Total Depletion	Harvest	Regeneration Total	1985-1990 Maximum Allowable Depletion
Spruce	12660	13217	10327		11823
Balsam Fir	5815	2195	2195		5911
Jack Pine	9195 (1)	10195	8246	N	14225
White Pine	50	74	74	/	100
Other Conifer	- (1)	78	78	A	-
Poplar	4720	1345	1105		4932
White Birch	1875	346	75		2079
Total	34315	27641	22100	23667	39070

(1) Initial (80-85) Allowable Cut for Jack Pine was based on no acceleration factor. All others are based on using full Average Age.
(2) Combined with other Forest Units for calculation purposes.

3.4 Records

A major obligation confronting all F.M.A. Agreement holders during their first five years of operation was to establish a comprehensive record-keeping system.

The Company's silvicultural records could be recovered and verified quickly and efficiently. All records could be traced from the office files through to project completion in the field.

The depletion records were up to date and accurate.

The Company invoicing and accounting records were accurate, up to date and auditable.

It was a pleasure for the Review Committee to review these records which were easily retrievable and well kept.

3.5 Company Commitment and Organization

The Review Committee found that Great Lakes has put in place the required organizational structure which is required to carry on integrated management. The Company has combined their logging operations with their silvicultural operations. This type of integration was one of the precursors to successful administration of an FMA. An excellent illustration of this is that the field jobs have been integrated, i.e. the cutters site prepare and then plant thus giving the individual a total view of the field operations. This has led to very high morale in the field.

Great Lakes Forest Products Ltd. has a two-tier organization. Their Head Office in Thunder Bay develops policy and approves Company plans. Their Divisional Offices (2) are responsible for the implementation of their operational program.

The Company and the Ministry have developed a very good communications network which is working very efficiently. This is a major credit to the two organizations.

Great Lakes Forest Products Ltd. continues to be amenable to displaying before the public all their planning efforts (Management and Operating Plans). The planning carried out for the first five years was commendable in that there were only two major revisions needing public input. This demonstrated to the Review Committee that planning expertise is now available within the Company.

If in the future Company plans have to be put before environmental scrutiny, the Review Committee feels the planning expertise within the Company is available to meet this requirement as well.

The Company has invested a considerable amount of its equity in the Agreement Area. They have hired a professional biologist whose responsibility is to carry out research and operational development work in silviculture. Another example is their research and development of silvicultural equipment, much of it at their own cost. The Company has not been backward in infusing their own money into many programs. Some examples of Company investment are their conversion of harvesters into prime movers for site preparation on difficult sites and numerous planting and seeding trials.

3.6. Integrated Resource Management

The special terms and conditions outlined in the planning documents were adhered to. These included:

- Modified cutting in a chevron pattern on a designated portion of the English River.
- Road re-alignments to protect fish spawning areas.

- Environmental considerations in bridge construction on the Suzanne River.
- No cutting in the Bonheur Kame area.

3.7 Company Concerns

The Company expressed concern over the availability of growth and yield data suitable for evaluating investments in silvicultural activity.

3.8 Field Trip

A two day field trip was organized both by helicopter and ground transport to view and verify the activities recorded in the office. While it was too soon to judge the success of certain treatments, all activities recorded in the office and selected for field verification existed on the ground.

4. Recommendations

Arising out of the Great Lakes Forest Products Ltd. English River F.M.A. review are two recommendations:

4.1 Recommendation 1

The Review Committee recommends that the individual F.M.A. holders be allowed to establish their own forest records systems as long as they can provide the required data within given time frames. The companies must have a system which can withstand public scrutiny. Duplication of record keeping should be eliminated. The Company and the Ministry should establish a reporting format that would eliminate duplication.

4.2 Recommendation 2

The Review Committee recommends that the Great Lakes Forest Products Ltd. English River F.M.A. be extended for a further five year term.

5. Conclusion

The Review Committee's conclusion from the review is that Great Lakes Forest Products Ltd. have fully taken on their responsibilities under the terms and conditions of the F.M.A. Agreement. They have very clearly demonstrated their ability and commitment to management on a given licenced area.

Five Year Review

E.B. Eddy Forest Products Ltd.
Upper and Lower Spanish Forest
Agreement 500400 and 500500
1980-85

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INTRODUCTION

The Minister of Natural Resources signed two Forest Management Agreements with E. B. Eddy Forest Products Ltd., effective April 1, 1980. These agreement areas, numbers 500400 and 500500, were termed the Upper Spanish Forest and the Lower Spanish Forest, respectively.

Section 15 of the Agreement states "The Minister agrees to determine at the end of each term of five consecutive years of the period of this agreement whether or not the obligations of the Company under the management documents have been performed....".

To carry out this assessment, the following Review Committee was appointed:

Mr. Terry Dodds, Regional Forester, Algonquin Region
Mr. Jim Young, District Manager, Sioux Lookout
Mr. Dennis Schafer, Regional Director, Southwestern Region (Chairman)

The Committee began by studying the Agreements, the Management Plans, the Five-year Operating Plans and analyzed quantitative performance in relation to planned activities. This was followed by more in-depth examinations and quality assessments in the Company offices and in the field.

The Upper and Lower Spanish Forests are contiguous areas, both supply the E. B. Eddy Mills at Nairn and Espanola and both are managed by the same company personnel. In any review of this Company's operations it is neither practical nor logical to examine the practices on each Forest separately. Accordingly, references to conditions, attitudes and records are essentially aimed at both Forests unless specifically stated otherwise.

AGREEMENT REQUIREMENTS

In terms of appropriate long and short term management planning matching with activity on the ground the Company is upholding its obligations under the Agreements.

Plans are produced for Ministry approval as per the schedule, logging operations conform to legislation, reforestation accomplishments are in excess of the requirements and adherence to the silvicultural ground rules is exemplary.

Invoices submitted by the Company for road construction, road maintenance, and silvicultural work were compared to map records and then to activities on the ground and no discrepancies were apparent.

PLANNED VERSUS ACTUAL ACTIVITIES

In a review of this nature one can become preoccupied with adherence to a plan at the expense of challenging the original plan. In this exercise, the 5-year operating plan, supplemented by annual work schedules becomes the guiding force and the document upon which Ministry approval is based. It receives public review and is the Ministry's source of information for future funding and planting stock production. From the time of preparation, other factors come into play e.g. market conditions, labour vagaries, site conditions, and funding constraints, which can change the forecasted level and types of activities. Amendments, or adjustments, are made via annual work schedules.Hence to compare the actual results to the planned activities five years ago is not appropriate. Such information compiled by the Ministry was nevertheless reviewed with the Company.

Roads

The degree of road construction in both Forests compared to other companies and compared to the area harvested had been identified as an item of concern. Accordingly, the Committee examined this. We found that the Company has not violated any terms of the Agreement in this regard. We did not see roads which were not required and, of course, roads on maps are also on the ground. Further, we had no quarrel with the road standards. There is a records problem brought on by the practice of paying 85 percent of road construction costs one year followed by the balance the next year when gravelling is completed. This has led to some double counting of the mileage of roads constructed but it is being reconciled. Table 1 shows the planned versus actual activities of road construction as reported annually.

TABLE 1
Summary of the amount of road originally planned and the amount actually constructed for the 1980-85 operating period.Maintenance is done annually.

			Kilometers	
			Planned	Actual
500400	E. B. Eddy Forest Products Ltd. Upper Spanish Forest	Primary	31.15	38.76
		Secondary	616.54	456.86
		Maintenance	-	286.81
500500	E. B. Eddy Forest Products Ltd. Lower Spanish Forest	Primary	150.32	135.97
		Secondary	434.78	176.90
		Maintenance	-	211.41

The new primary roads on the Lower Spanish are, for the most

part, not yet in use except for servicing, commuting and recreation. A few secondary roads have also been built in advance. The Company makes an attempt to build roads one year in advance of anticiplated need. Several conditions serve to explain a relatively high mileage of secondary roads. Firstly, many areas are extremely rugged, thin-soiled and bordering on inoperability. These stands call for winding roads, steep grades and large quantities of fill. The terrain also reduces the skidding distance, necessitating more roads. Secondly, the standing conifer material is interrupted by pure hardwood stands, or the confifer is found in mixed stands. Both conditions dictate added miles of road per unit and thence per hectare reforested.

The members of the Review Committee were impressed when they compared the proposed road locations to the final constructed routes in difficult terrain. Very little deviation was evident, all of which points to a talented photo interpretation and road construction corps.

Harvesting

The Company's logging and regeneration operations are aimed at maintaining a constant wood flow into its mills at Nairn and Espanola. Supplementing the supply from the FMA areas is a larger proportion of purchased material in the form of wood chips from sawmills and roundwood from private holdings in the Espanola area. This practice brings with it the vagaries of other producers and contributes substantially to the complexities of planning the harvests in the FMA areas.

If one reviews the total volume removed from both Forests over the five-year period compared to the five-year operating plan there is a significant volume of material not removed. However, if one goes back to annual plans compared to the actual harvest on an annual basis, the figures are much more in line, eg. the cut has been 85 percent of planned by volume

on a year to year basis. In making this comparison one must also consider the Company's method of allocating stands for harvest. It attempts to maximize the yield from every stand by allocating the gross area and total volume. The question of operability is subsequently determined on the ground. Some companies arbitrarily reduce these figures and label part of the area "by-pass".

The Maximum Allowable Depletion (allowable cut) calculated for both Forests is shown in Table 2. The Company intended, at the beginning of the planning period, to harvest 33,012 hectares in the Upper Spanish Forest and 31016 hectares in the Lower Spanish Forest. The actual levels of harvest accumulated to 1984-85 were 11,460 and 1,871 respectively.

Table 2 compares the area available for depletion (Maximum Allowable Depletion) to the levels forecasted and those actually harvested.

TABLE 2
Maximum Allowable Depletion for Upper and Lower Spanish Forests 1980-1985.

	Total Hectares (1980 - 1985)		
Company and Forest Name	Maximum Allowable	Forecasted Harvest	Actual Harvest
500400 E.B. Eddy Forest Products Ltd. - Upper Spanish Forest	58,176	33,012	11,460
500500 E.B. Eddy Forest Products Ltd. - Lower Spanish Forest	53,685	31,061	1,871

The low levels of harvest on the Lower Spanish Forest were due to a consolidation of efforts on the Upper Spanish Forest because of marketplace economics and due to the fact the Lower Spanish Forest had not been previously accessed.

The Company indicated the planned pulp mill expansion was in progress and was not completed until 1983 and the sawmill expansion not completed until 1985 as further reasons for underharvesting the areas. We suspect that another cause would be a lack of incentive to declare any surpluses. Under the terms of the Agreement, no penalties for failure to utilize the planned harvest cut are applicable during the first five years. Realizing that little can be done to change history, the Committee reviewed those sections of the 1985-1990 Operating Plan to see how the matter was addressed. We found that surpluses have been declared and theoretically this volume is available to others. Generally speaking, this surplus material is in mixed, inaccessible stands.

Silviculture

For the most part, the Company is following a clear-cut-and-plant silvicultural system. In even-aged jackpine this is appropriate and successful. The Committee inspected (albeit briefly) almost every undertaking by the Company. Details were not recorded but an impression was gained by the extent of the Company's work and its approach to the task.

Several forms of site preparation are being used, with Young's Teeth on the blade of a heavy bulldozer being most common. Windrowing in heavy residual poplar stands is successful but costly.

Planting stock is a mixture of bare root and containerized seedlings (Japanese paper pots).

As competition overtakes the planted stock, aerial release

with 2,4-D is practiced.

Figures 1 and 2 show the comparison between the levels of operations planned in 1980-81 versus the actual achievements in 1980 through 85. Tables 3 and 4 summarize the actual operations on both Forests respectively. The harvest levels on the Upper Spanish Forest over the five year term were 35 percent of those forecast initially in 1980-81. However, regeneration, tending and site preparation were 72, 52 and 64 per cent respectively. when compared to annual work schedules which reflect actual ground conditions, the actual forest operations either approximated or exceeded those planned.

In reviewing the planned vs actual regeneration, a shortfall is evident which is directly related to the reduced harvest. In treating recent or current cutover lands, the Company is one year, or less, behind the cutters. In terms of overall cost and keeping the land in production, this is a sound practice but by being so close to the logging there will be understandable variances in annual planning.

Aerial seeding is down from that forecasted and has been replaced with planting. Seeding has been successful in this area but it is not a reliable technique. Should this, or any other regeneration method, fail the Company was obliged to retreat the area at its expense. Since seeding is a much less costly approach than planting the Committee commends the Company and the Ministry on agreeing to share the cost of retreatment in the upcoming operating period. Given the obvious potential of this technique, and the significant savings to the Ministry and the Company, the Committee adds the following recommendation.

RECOMMENDATION NO 1

THAT THE COMPANY UNDERTAKE MORE RESEARCH AND DEVELOPMENT IN THE PURSUIT OF MINIMIZING THE RISKS IN THE AERIAL SEEDING OF JACKPINE. PAST RESEARCH SHOULD BE REVIEWED AND TRIALS SHOULD

FIGURE 1
Comparison of the actual levels of harvest, regeneration, tending and site preparation accumulated to 1985 and expressed as a percentage of the levels originally planned in the 1980-85 Operating Plan.

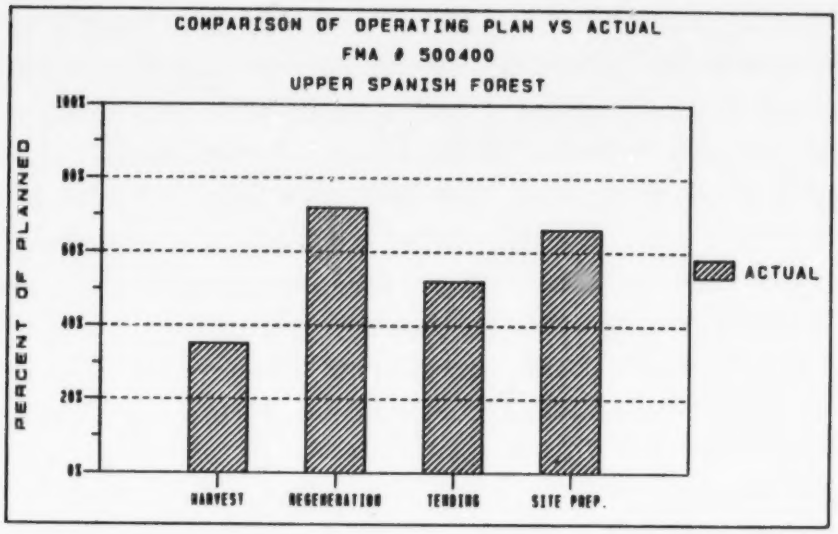

TABLE 3
Detailed summary of companies' forest operations and ministry payments for 1980-85.(Ministry phase-in work not included)

FOREST MANAGEMENT AGREEMENT NO. 500400

E. B. EDDY FOREST PRODUCTS LTD. UPPER SPANISH FOREST

HARVEST CUT: 11460 HA

REGENERATION		HECTARES	DOLLARS (000)
TREATED			
PLANTING	i) BAREROOT	1588	420.1
	ii) CONTAINER	2196	376.2
SEEDING	i) DIRECT	427	4.0
	ii) WITH SITE PREPARATION	0	
TOTAL, TREATED		4211	800.3
NATURAL			
STRIP CUTTING		0	
SEED TREE CUTTING		0	
CLEAR CUTTING		207	
TOTAL, NATURAL		207	
TOTAL, REGENERATION		4418	800.3
TENDING			
CLEANING, CHEMICAL		686	(1)
AERIAL		1086	36.4
OTHER		0	
TOTAL, TENDING		1772	36.4
SITE PREPARATION			
MECHANICAL		7929	1438.6
CHEMICAL		0	
PRESCRIBED BURN		0	
TOTAL, SITE PREP.		7929	1438.6
ACCESS ROAD CONSTRUCTION AND RECONSTRUCTION		KILOMETERS	
	PRIMARY	38.76	
	SECONDARY	456.86	
	TOTAL	495.62	6209.2 (2)
MAINTENANCE		286.81	113.6
TOTAL			8598.1

* Does not include Ministry Phase-In operations.

(1) Costs included under Aerial Tending.

(2) Costs not separated.

FIGURE 2

Comparison of the actual levels of harvest, regeneration, tending and site preparation accumulated to 1985 and expressed as a percentage of the levels originally planned in the 1980-85 Operating Plan.

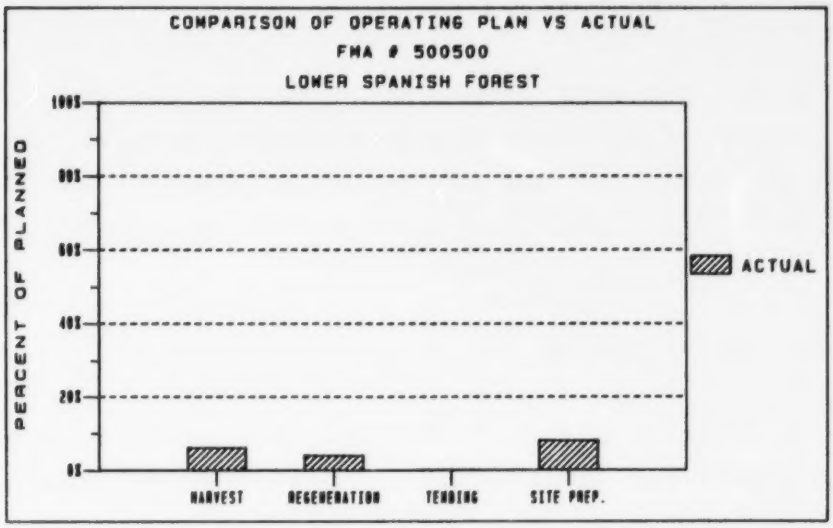

TABLE 4

Detailed summary of company's forest operations and ministry payments for 1980-85.(Ministry phase-in not included)

FOREST MANAGEMENT AGREEMENT NO. 500500

E. B. EDDY FOREST PRODUCTS LTD. LOWER SPANISH FOREST

HARVEST CUT: 1871 HA

REGENERATION		HECTARES	DOLLARS (000)
TREATED			
PLANTING	i) BAREROOT	55	14.1
	ii) CONTAINER	199	38.0
SEEDING	i) DIRECT	0	
	ii) WITH SITE PREPARATION	0	
TOTAL, TREATED		254	52.1
NATURAL			
STRIP CUTTING		0	
SEED TREE CUTTING		0	
CLEAR CUTTING		0	
TOTAL, NATURAL		0	
TOTAL, REGENERATION		254	52.1
TENDING			
CLEANING, CHEMICAL		0	
AERIAL		0	
OTHER		0	
TOTAL, TENDING		0	
SITE PREPARATION			
MECHANICAL		814	167.9
CHEMICAL		0	
PRESCRIBED BURN		0	
TOTAL, SITE PREP.		814	167.9
ACCESS ROAD CONSTRUCTION AND RECONSTRUCTION		KILOMETERS	
	PRIMARY	135.97	
	SECONDARY	176.90	
	TOTAL	312.87	5823.4 (1)
	MAINTENANCE	211.41	86.6
	TOTAL		6130.0

* Does not include Ministry Phase-In operations.

(1) Costs not separated.

BE CONTINUED ADDRESSING SUCH FACTORS AS SITE, APPLICATION RATES AND TIMING.

Hand in hand with aerial seeding is the possibility of prescribed burning as a site preparation tool. The Company and the Ministry recently cooperated in conducting a burn in the Cartier area. Such trials should be continued with the aim of reducing site preparation costs.

There is a shortfall in plantation release which is not serious and is attributable to (1) the unavailability of contractors (spray aircraft) for the short period in the Fall, and, (2) uncertain assessments the previous year. (Plant competition can be borderline one year and severe the next.) Jackpine appears to be sensitive to herbicides during the growing season which leaves a short period before leaf fall for treatment.

RECOMMENDATION NO 2

THAT THE COMPANY UNDERTAKE RESEARCH FOR THE OPTIMUM CHEMICAL FOR CONTROLLING THE WEEDS OF THESE FORESTS, TIME OF APPLICATION, RATES, ETC. WHILE MINIMIZING THE ADVERSE EFFECT ON JACKPINE.

The Company was obligated to treat Not Satifactorily Regenerated (NSR) lands under the Agreement. Table 5 shows the obligations and area actually treated.

TABLE 5
Not Satifactorily Regenerated obligations and actual treatments

Agreement No. and Name	NSR Obligation to date	NSR Treated to date
500400 E.B. Eddy Forest Products Ltd. - Upper Spanish Forest	695	5,981
500500 E.B. Eddy Forest Products Ltd. - Lower Spanish Forest	608	610

MAINTENANCE OF PRODUCTIVITY

The Crown Timber Act requires, after the end of each term of five years of an agreement to "lay before the Assembly a report in respect of the relationship between the harvest and growth, including regeneration, of timber during the said term on the area subject to the agreement". This section deals with that requirement specifically.

The Forest Management Agreement obligates the Company to harvest and regenerate the Forest in such a manner as to produce successive crops of timber on a sustained yield basis. Table 6 and 7 show a comparison of the Allowable Depletion during the first five year term of the Agreement and lists the harvest, depletion and regeneration efforts. The Allowable Depletion for the next five year term is also shown. Normally the Allowable Depletion is expected to drop as the overmature portion of the forest is fully harvested or depleted. The present demands of the Company do not require full utilization of the Allowable Depletion and as such it is expected to remain at the levels indicated.

TABLE 6

Comparison of the 1980-85 Allowable Depletion,total depletion, harvest and regeneration and the 1985-90 Allowable Depletion. (Ministry phase-in included)

COMPARISON OF HARVEST AND GROWTH
FOR THE UPPER SPANISH FOREST

FOREST MANAGEMENT AGREEMENT NO. 500400

E. B. EDDY FOREST PRODUCTS LTD.

1980 to 1985

(hectares)

Working Group or Forest Unit	1980-1985 Maximum Allowable Depletion	Total Depletion	Harvest	Regeneration Total	1985-1990 Maximum Allowable Depletion
Jack Pine	13894 (1)	8255	6306		17718
Spruce	13410	2854	2310		13884
Balsam Fir	- (2)	212	212	N	4365
Other Conifer	- (2)	29	29	/	431
Poplar	17414	2732	2108	A	24703
White Birch	13458	494	494		14414
Other Hardwood	- (2)	1	1		1049
Total	58176	14577	11460	10572	76564

(1) Initial (80-85) Allowable Cut for Jack Pine was based on a maximum acceleration factor of 1.3 x normal. All others are based on using full Average Age.
(2) Combined with other Forest Units for calculation purposes.

TABLE 7

Comparison of the 1980-85 Allowable Depletion,total depletion, harvest and regeneration and the 1985-90 Allowable Depletion. (Ministry phase-in included)

COMPARISON OF HARVEST AND GROWTH
FOR THE LOWER SPANISH FOREST

FOREST MANAGEMENT AGREEMENT NO. 500500

E. B. EDDY FOREST PRODUCTS LTD.

1980 to 1985

(hectares)

Working Group or Forest Unit	1980-1985 Maximum Allowable Depletion	Total Depletion	Harvest	Regeneration Total	1985-1990 Maximum Allowable Depletion
Jack Pine	14195 (1)	1100	1083		21125
Spruce	6025	197	179		6305
White Pine	2785	29	28	N	2854
Red Pine	1120	6	6	/	1172
Balsam Fir	- (2)	11	11	A	1755
Other Conifer	- (2)	-	-		142
Poplar	14550	476	476		20954
White Birch	14130	88	88		15212
Other Hardwood	880	-	-		1056
Total	53685	1907	1871	632	70572

(1) Initial (80-85) Allowable Cut for Jack Pine was based on a maximum acceleration factor of 1.3 x normal. All others are based on using full Average Age.
(2) Combined with other Forest Units for calculation purposes.

INTEGRATED RESOURCE MANAGEMENT

This section deals with other users of this vast forested area -- the tourist outfitter, the hunter, the cottager, the fisherman, the canoeist, etc.. The land has numerous large and beautiful lakes, long rivers and exciting scenery. Logging can, of course, impact on these activities. The Company's plans usually address these other interests. Where conflicts develop,the Ministry encourages resolution between the users.

The area of the Upper and Lower Spanish Forests is affected by myriad uses and interests, in addition to timber production. The Company recognizes the necessity of coexisting with these other interests. For many years it has opened its roads to the public and has attached importance to its image and reputation in the Espanola area. Local officials are quick to point out, however, that it is not their responsibility to enhance these other resources but their actions indicate a willingness to protect significant features.

The Committee studied several files related to watercrossings, size of cuts and shoreline reserves. This was followed by a helicopter inspection of most of the controversial sites.

Watercrossings

The Company has constructed a number of major watercrossings in the Upper and Lower Spanish Forests.

a. Mozhabong Lake, Ivy Township

The Mazhabong Lake Causeway was examined from the air. No problems were noted with this crossing. Because of tourism concerns in the area (ie Indian Lake), a number of alternative access routes were examined. Two public meetings were held in Chapleau and Espanola. The

Mazhabong route was found to be the least controversial and cheapest. Currently, the road is gated approximately six miles from Mozhabong Lake in order to prevent public access to the Mozhabong - Indian System.

b. Bagsverd Creek, Chester Township

Originally, the Company had experienced some problems with this crossing in that the construction crew commenced operations without proper supervision. As a result, a very large right-of-way was cleared adjacent to the creek and a lot of fine material and debris was bulldozed into the creek. The Company apparently reacted quickly to correct the situation and did their best to rehabilitate the site. A site inspection of the bridge revealed only minor erosion problems.

c. Mississaugi River, Fulton Township

This is a major river crossing across a Waterway Park. This bridge was inspected from the air. The Company took special precautions to build the bridge i.e. constraints were imposed as to the time of year the bridge was built and also in the manner which they could get their equipment across the river. The company appears to have done an excellent job on this bridge as verified by the complimentary letter from the District Manager in Chapleau. The Company has kept the bridge approach right-of-way very narrow and erected the bridge with minimal disturbance to shoreline vegetation.

d. Onaping River, Leinster Township

This is a major bridge crossing. The Ministry asked for a narrow right-of-way on the bridge approaches. They also put conditions on the time of construction of the bridge, i.e. the Company was not allowed to work during spring and

early summer periods to avoid conflict with walleye spawning and incubation.

e. Friday Creek, Rhodes Township

Alternate sites for this crossing were examined. The site that was chosen was not the cheapest but was chosen in order to avoid possible disturbance of walleye spawning runs.

f. Alces Creek, Foucault Township

The West Branch Road crosses Alces Creek in several places. Alces Creek is a cold water creek and the Ministry and Company have co-operated closely to try and minimize the number of crossings and to keep the road as far from the creek as possible.

The Company in cooperation with the Ministry has carried out some stream improvements in Alces Creek in order to improve trout production. The Company placed rock and also created pools in sections of the creek. This project was written up in the Ministry's Aski magazine. The Company is to be complimented for their efforts in this regard.

Other Operating Constraints

The Ministry has put a number of constraints on Company operations in order to protect other values. The following are some examples:

Peninsula on Ramsay Lake, Kelso Township

The Company was asked to maintain a narrow right-of-way at the narrowest part of the peninsula and to keep all harvesting operations 400 feet from the Lake. The main

road is to be pulled out upon completion of the operation. This site was inspected from the air and the Ministry condition would appear to have been met.

Ramsay Lake is a tourism lake and the Ministry's intent is to prevent further public access to the lake. This intent operations in this area until the moose hunt was over.

Deluge Lake, Ethel Township

This is a potential outpost camp lake and the Company was asked to remove all roads within 20 chains of the lake. The area has now been scarified and there are no roads within 15 chains of the lake; it was uncertain whether further action is required by the Ministry.

In summary, the Company has followed any special conditions that the Ministry has imposed on their operations. Special conditions have been placed on operations in order to protect fisheries habitat, tourism concerns, park values, nesting sites and moose aquatic feeding areas. Apparently, the Ministry has not found it necessary to impose special conditions to protect moose upland habitat. Most of the Company's recent cutovers appear to be fairly well broken up due the rough topography.

From discussions with Company staff, two concerns became evident:

It is becoming commonplace for the Ministry to place conditions on the Company to remove roads and bridges once operations are completed. It has not been resolved as to who pays to do this work. The Company feels that the Ministry should pay them to do it as it often means bringing equipment back into the area. The Ministry of course feels the Company should pay i.e. a cost of doing business.

The Ministry would like to close contentious roads as soon as

possible after harvesting operations are completed. The Company outlined one situation where they pulled a road out and found a year later that their regeneration efforts were not successful and had to be retreated.The Company would like to leave all roads in place until regeneration is to the "free to grow" stage. This of course, in most situations, is not satisfactory to the Ministry.

RECOMMENDATION NO 3

THAT THE MINISTRY AND COMPANY SHOULD RESOLVE THE ISSUE OF PAYMENT FOR REMOVING OR GATING ROADS TO ENHANCE OR PROTECT RESOURCES, WHICH MAY OCCUR, FOR THE BENEFIT OF OTHER FOREST USERS.

Approach to Areas of Concern

The Company pointed out that the Ministry approach to Areas of Concern or Modified Management Areas is quite different on the two FMAs. In the Upper Spanish the Ministry has delineated the specific areas whereas in the Lower Spanish, the Ministry outlines the particular concerns to the Company and asks the Company, based on existing guidelines, to propose the cutting prescriptions. The Company sees the strengths and weaknesses of both approaches and has no strong feelings as to which is better. The approach taken in the Lower Spanish most closely resembles the Ministry's policy.

FOREST PROTECTION

While protection of the forest from insects, fire and disease continues to be a Ministry responsibility it is an integral component of forest management and was reviewed with the Company.

Coming from other parts of the province, the members of the Review Committee were not prepared for the striking effect of

the current Jackpine Budworm epidemic. The miles and miles of red and brown foliage was frightening to the point of causing us to ask ourselves why we were examining some small plantations when the entire forest was being devoured around us. It seemed akin to ordering a Smokey Bear costume in the face of a major fire. Larvae were everywhere -- from mature trees to newly planted trees.

Extensive spraying with Bacillus thuringiensis (B.t.) took place in 1985 and we are not yet aware of the effect of this nor the predictions for next year. If the same stands are attacked again resulting in mortality, salvage attempts would be futile (i.e. took much, too inaccessible, not enough time to keep ahead of wood boring insects) and losses could jeopardize the mill's futures. If we are overstating the problem and overreacting to the visual impact, we will be pleased to be corrected.

The Company feels it has the most to lose through these attacks but also feels that it is on the outside looking in. Although there is no official word on the effectiveness of the 1985 treatment, Company officials indicate that it looks patchy. The use of B.t. might not be as appropriate as a chemical as fenitrithion and they feel that this chemical should have been tried on a small block in 1985 for comparison purposes. If B.t. is the optimum deterrent, given the size of the affected area and the varying stages of development of the insect, it could be necessary to plan two applications during the same season.

Company officials also feel that the public involvement followed by decision making prior to treatment is far too late for proper planning.

RECOMMENDATION NO 4

THAT THE COMPANY BE FULLY APPRISED AND INVOLVED IN ALL ASPECTS OF THE CURRENT JACKPINE BUDWORM ATTACK -- FROM SURVEY METHODS

AND RESULTS TO PUBLIC INVOLVEMENT.

The Company recognizes that jackpine stands are fire susceptible and has geared itself to provide the initial attack on fires on Company operations although it is a Ministry responsibility. The Company employs a Forest Protection Supervisor on a year round basis whose primary responsibility is training. Four crews, normally based in different parts of the Forests, are trained for initial attack.

RECORDS

The Company maintains a comprehensive set of silviculture and road records. These records can be reconciled with annual reported work programs and are summarized by activity type and by township. Each silvicultural record has a copy of the silvicultural card and any subsequent assessments done for the project. The Company has master township maps of harvest and silvicultural treatments and road construction.

Certain recommendations flow from this excellent record-keeping system and from the recognition that the Ministry has completed its phase-out role.

RECOMMENDATION NO 5

THAT ALL MINISTRY RECORDS OF MINISTRY SILVICULTURAL WORK ON BOTH FORESTS BE RECONCILED BY THE DISTRICTS AND TRANSFERRED TO THE COMPANY, INCLUDING THE STATUS OF NSR AREAS WHICH THE MINISTRY HAS TREATED. FTG ASSESSMENTS ON MNR TREATED AREAS SHOULD BE ACCELERATED BY MNR AND THE RESULTANT INFORMATION FED INTO THE MAXIMUM ALLOWABLE DEPLETION CALCULATIONS.

RECOMMENDATION NO 6

THAT THE MINISTRY REMOVE ITSELF FROM MAINTAINING DUPLICATE

PROJECT RECORDS AND ONLY RETAIN SUMMARIES OF WORK ACCOMPLISHED TO SUBSTANTIATE PAYMENTS.

COMPANY COMMITMENT

A review of this nature is surely aimed at the question, 'Is the FMA working?'. A number of topics have been examined and presented in this report as part answers to that question. The basic criterion for success in any such venture is staff attitude. If all levels of the organization embrace a satisfactory level of commitment and dedication, anything will work. In the case of E. B. Eddy Forest Products, we continually saw and felt evidence of these qualities. From the top of the Forestry Division to the foresters in the camps we found enthusiasm and dedication. Personnel in the field such as Messrs. Boddy, Bruce, Allain, Morandin, Pearce, ... are results-oriented, cost conscious, innovative and they know their areas.

A corporate commitment to the Forest Management Agreements is apparent in the Company's expanded organization. Some staff have been shifted from other duties to work on the FMAs on a full time basis and four new foresters have been hired as a result of signing the FMAs, including a former Ministry employee with a technology development and genetics background. In addition, there are approximately 15 graduate and undergraduate foresters and technicians on seasonal staff.

While planning and management prescriptions are developed by a central "Resources Development" group, the operations are carried out in an integrated fashion. Both harvesting and silviculture come under a District Superintendent. This marriage brings with it efficiencies in manpower and equipment as well as "cleaner" logging which minimizes forest renewal costs.

COMPANY CONCERNS

Regardless of the successes and the Company's embracement of the FMA philosophy of shifting the responsibility for reforestation to the wood user, one cannot spend eight days (and several nights) with Company personnel without listening to suggestions for improvement. These are outlined below in no particular order.

1. The Company has serious concerns centred on the Province's future ability to fund the Provincial FMA program in its present form. They point to rising costs and the inability to control many of these costs due to labour demands.

   Currently, the Company treats 100 per cent of the cutover unless both parties agree that an area is untreatable. Perhaps in the future more focus must be put on the prime sites and other neglected sites. Stumpage rollback is also an industry suggested method of maintaining funds in the program.

2. Some Company officials feel that there is room to streamline the administrative process. At the present time invoices are submitted throughout the year for road construction (based on joint measurements), for site preparation, for planting, for spraying, for road maintenance and then the Ministry sends the Company an invoice for Crown Dues.

3. Under the terms of the FMA, it is the Ministry's responsibility to provide planting stock. As the Ministry was gearing up to furnish this extra material for a number of FMA areas, E. B. Eddy indicated a willingness to produce their own requirements under similar arrangements with the Ministry's private growers. This request was not accepted.

   With respect to the supply of containized stock the Company raises the following points.

- stock quality varies between producers;
- some stock does not meet the standards and shipments are difficult to turn aside when planters are waiting and areas have been prepared;
- the Ministry is late in notifying the Company regarding the of stock, thus permitting little time to inspect stock before shipping;
- there are delivery problems in using the lowest tender arrangement ("truckers accept no responsibility, truckers get lost, unloading system is unsafe....");
- private growers show little regard for the user (Company);
- the Company clearly wants a designated supplier and wants to work with that supplier on a continuing basis. (The Committee acknowledges the Company's point but there are logistical problems in this related to the jackpine/spruce growing schedules. Nevertheless we suggest that the Northern Region consider the matter carefully.);
- the 'plug', in lieu of the paper pot, should be investigated;
- some bare root stock this year shows evidence of a moisture stress problem;
- Chapleau bare root stock had excessive root pruning in 1985.

The Review Committee did not investigate the above concerns -- they have been raised by the Company and are presented here for the Ministry's consideration.

4. Sporadic meetings have been held between the Company and senior MNR field staff from both regions. These meetings have provided the forum for resolving differences and exchanging ideas in a face to face setting. The Company feels these sessions should take place regularly.

5. The Company also has serious reservations surrounding the Designated Crown Represntative (DCR) arrangement and this

is dealt with next.

OBSERVATIONS

The Designated Crown Representative (DCR) for each forest is the Ministry's spokesperson on Company/Ministry matters and represents the Company on internal MNR issues. This arrangement was developed in response to company requests for one MNR voice. After five years, the present DCRs (in Gogama and Espanola) admit to a real discomfort level in their roles. They see themselves as something between the Company and the Ministry and not really belonging to either. Their duties take them across district boundaries and in this anomalous setting, they seem to have some cloudy responsibility but little authority. In the minds of some Ministry staff, they have too much authority and they circumvent the normal chain of command.

The DCRs feel that on everything but minor issues, the Company deals with a Regional Forester, a District Manager or Queen's Park. Too often the DCR then receives notification of a change in direction, or resolution of an issue, from someone in the Company.

The Company, while harbouring no major concerns with the incumbents, is not happy with the present arrangement. They point to having five different DCRs on the two forests over the five-year period. While the Company supports the concept of dealing with one Ministry person for each forest, it does not work well in practice.

Each DCR speaks for two districts and he is really in no position to do so, particularly on non-forestry topics. Consequently, the Company often deals on a first hand basis with a District Manager, by-passing the DCR. When the DCR arrangement was proposed, the Company anticipated a more

senior person in this role.

This issue was much debated and the Committee makes the following recommendation:

RECOMMENDATION NO 7

THAT THE MINISTRY SHOULD CONSIDER THE PRESENCE OF ONE DESIGNATED CROWN REPRESENTATIVE TO ADMINISTER MINISTRY INVOLVEMENT ON BOTH AGREEMENT AREAS.

Notwithstanding the suggestions made in this report, the Review Committee is pleased to recommend:

RECOMMENDATION NO 8

THAT THE TWO AGREEMENTS WITH E. B. EDDY FOREST PRODUCTS LTD. BE EXTENDED FOR A FURTHER TERM OF FIVE YEARS.

SUMMARY OF RECOMMENDATIONS

1. That the Company undertake more research and development in the pursuit of minimizing the risks in the aerial seeding of jackpine. Past research should be reviewed and trials should be continued addressing such factors as site, application rates and timing.

2. That the Company undertake research for the optimum chemical for controlling the weeds of these forests, time of application, rates, etc. while minimizing the adverse effect on jackpine.

3. That the Ministry and Company should resolve the issue of payment for removing or gating roads to enhance or protect resources, which may occur, for the benefit of other forest users.

4. That the Company be fully apprised and involved in all aspects of the current Jackpine Budworm attack---from survey methods and results to public involvement.

5. That all Ministry records of Ministry silvicultural work on both forests be reconciled by the districts and transferred to the Company, including the status of NSR areas which the Ministry has treated. FTG assessments on MNR treated areas should be accelerated by MNR and the resultant information included in the Maximum Allowable Depletion calculations.

6. That the Ministry remove itself from maintaining duplicate project records and only retain summaries of work accomplished to substantiate payments.

7. That the Ministry should consider the presence of one Designated Crown Representative to administer Ministry involvement on both Agreement areas.

8. That the two Agreements with E. B. Eddy Forest Products Ltd. be extended for a further term of five years.

Five Year Review

Spruce Falls Power and Paper Co.
Gordon Cosens Forest
Agreement 500600
1980-85

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INTRODUCTION

The Spruce Falls Power and Paper Company Limited has operated successfully since its incorporation on April 28, 1926 in the town of Kapuskasing, Ontario. It is a major employer in the area which supports a population of approximately 17,000 and an economy heavily dependent on the viability of the Spruce Falls enterprise.

The Company operates primarily on wood obtained from the Gordon Cosens Forest, located in the heart of the northern Ontario clay belt, and includes all or part of 86 Crown Townships.

On September 19, 1980, the Spruce Falls Power and Paper Company Limited and the Minister of Natural Resources signed Forest Management Agreement # 500600 for a term of twenty years. Commencing April 1, 1980, the agreement covered a total of 16,104,156 square kilometres.

The agreement also outlined a review process to be followed at specified times. As stated in paragraph 33:

"The Minister agrees to determine at the end of each term of five consecutive years of the period of this agreement whether or not the obligations of the company under the management documents have been performed or satisfactorily performed in such term..."

The following is a report of the areas inspected by the Review Committee, during the F.M.A. review of the Spruce Falls Power and Paper Company Limited, during the week of August 19-27, 1985, by the following appointed Committee:

Mr.J.T.Rudolph - Regional Forester, Thunder Bay
Mr.J.R.Chevalier -Reginal Biologist Sudbury
Mr.D.R.Johnson -Regional Director, Kenora (Chairman)

AGREEMENT REQUIREMENTS

The Review Committee was satisfied that the Company met or has attempted to meet all of the Agreement requirements.

The Ground Rules for the period 1980-85 were amended by mutual agreement only once during that period. The amendment concerned a cone collection process. Proper documentation outlining this change to the Ground Rules was available.

MANAGEMENT OBLIGATIONS

Introduction

A total of 7.5 person-days of the Review Committee's time was spent inspecting various regeneration treatment areas in the field. The most important observations made as a result of this field time are outlined below.

Planting

Spruce Falls staff provided the following interesting statistics:

Current Mill harvest level = 4 million trees Current planting level = 6 million trees Planned planting level = 9 million trees

Plantation Tending

There are apparent differences in the effectiveness of 2,4D and "Roundup" (glyphosate) herbicide chemicals in managing competing vegetation. "Roundup" was quite successful in controlling competing vegetation, particularly grass/sedge, raspberry and poplar. However, a number of upland planting projects, including the Not Satifactorily Regenerated (NSR)

work viewed, were sprayed with 2,4D rather than "Roundup". As a result, conifer were not fully released from competing vegetation and as a result not free-to-grow.

Further, it is apparent that on some sites, herbicide release of conifer is required within one to two years after site preparation.

The Company indicates that it is aware of the need for more rapid herbicide treatment follow-up after the initial regeneration effort. It is seriously considering the increased use of "Roundup" relative to 2,4D herbicide use on its plantations. It must also be noted that the chemical Roundup has only been approved for operational use since the 1984 field season.

Upland Site Treatment

Upland sites comprise approximately 20 percent of the total Forest Management Agreement Area. These upland sites must be planted, but they appear to be presenting the greatest problem to the Company for the successful establishment of a new tree crop.

Tractor blading as a site preparation technique on these sites appears in some cases to be complicating the early crop establishment phase in two ways and potentially a third:

1. Bare root stock is used where the organic layer has been scraped off and planted in clay soil rather than in the organic layer over the clay. As a result, young planted nursery stock grows poorly. The Company is training planters to recognize proper microsites.

2. The mechanical site preparation techniques are promoting rapid re-growth and invasion of competing vegetation on certain sites.

3. The presence of poplar and other marginally desirable species between the wind rows created by site preparation could present a problem in two ways:

i) delayed establishment of free-to-grow (FTG) status for corridor planted spruce;

ii) if the poplar between the wind rows is killed by subsequent herbicide treatment, balsam fir will remain as a significant component of the next tree crop and possibly be impacted by spruce budworm in its normal 30 - 40 year cycle in this area.

Spruce Falls is very aware of this problem on their upland sites and is investigating steps to improve the situation. Site modification techniques using herbicides are being considered to improve the effectiveness of the possible prescribed burning of these sites.

Recommendation 1.

THE USE OF PRESCRIBED BURNING BY THE COMPANY AS A SITE PREPARATION TECHNIQUE IS ENCOURAGED AND SHOULD BE GIVEN A HIGH PRIORITY FOR THE TREATMENT OF UPLAND SITES.

Plantation Density

Through the F.M.A. Ground Rules, Spruce Falls has established a plantation density of a minimum 700 trees per acre. The Company indicated their target is in the range of 800 trees per acre. The suitability of this tree planting density has been a subject of local discussion for some time. The visual impact of this planting density is particularly noticeable in the upland corridor planting being done by the Company. Spruce Falls has recently planned to conduct spacing trials in co-operation with both

the Canadian Forestry Service and the Northern Forest Development Group. The Company is commended for this initiative. In view of its large tree planting program, it is becoming increasingly important to scientifically establish the number of trees required on various forest sites to provide a fully stocked stand at rotation age, in relation to management objectives.

Fall Planting

Fall season planting is a concern which should be monitored by the Company. Success is dependent on fall weather conditions. Approximately fifteen percent of the planting program is carried out in the fall. This is planned to be reduced in the next five years to about ten percent.

Natural Regeneration

The Company estimated that 10,496 hectares of its Agreement area regenerated naturally during the five year period (1980-85). Area regenerated under this category was reported annually.

The Company is not using a fixed percentage of cutover to determine the natural regeneration level. Rather, aerial photo interpretation cross-checked with logging techniques and site condition, in addition to local forester experience, is the method used to determine the annual level of natural regeneration.

NSR Treatment

The majority of this Company's NSR area required tending. There has been a major tending effort carried out by the Company. 35,314 hectares were aerially tended out of a total of 42,345 hectares. The Company's five year NSR obligation of 10,087 hectares was exceeded more than four

fold.

Table 1 (Silvicultural Prescriptions)

It was determined that the Company has been adhering to the silviculture prescriptions outlined in Table 1 of the Ground Rules.

Surveys

Stocking assessment surveys have, to date, been conducted only in the "natural regeneration" category areas prior to herbicide spraying. The Company plans a major stocking assessment survey thrust beginning in late 1985. Depleted areas not artificially treated for regeneration will be included in this stocking survey.

A number of old Ministry initiated plantations have been submitted with appropriate documentation to the local DCR for free-to-grow surveys. No Company originated project has been requested for free-to-grow surveys to date as the required growing period has not yet been completed.

Recommendation 2.

CONTINUED MONITORING, PARTICULARLY OF THE 1980-85 PERIOD'S PRESCRIPTION RESULTS, SHOULD RECEIVE A HIGH PRIORITY IF TIMELY DECISIONS ARE TO BE MADE ABOUT THE ADEQUACY OF THESE PRESCRIPTIONS.

By following these procedures, a possible costly retreatment effort could be avoided. The prescriptions for upland tree planting, 2,4D herbicide spraying and lowland natural spruce regeneration should receive the greatest attention for early monitoring.

Roads

The Operating Plan 1980-85 was reviewed in respect to approved road locations. This was compared with an updated Company map which showed roads constructed under the FMA to date. The Company adhered very closely to the planned development.

Field trips were conducted by truck in Ford, Stringer, Hicks and Oke Townships where roads have recently been constructed. No discrepancies were noted between mapped roads locations and those observed on the ground. An aerial field trip was conducted through Radisson, Mons, Byng, Puskuta and Ericson Townships. All roads shown on maps were found to be present in the field.

Road construction planned in 1980-81 was exceeded at the end of the five year period. Table 1 shows the planned and actual road construction activities and the maintenance program.

TABLE 1
Summary of the amount of road originally planned and the amount actually constructed for the 1980-85 operating period.Maintenance is done annually.

	Kilometres	
Road Type	**Planned**	**Actual**
Primary	**298.9**	**325.47**
Secondary	**51.5**	**71.10**
Maintenance	**x**	**628.61**

Actual construction exceeded that planned due to the

introduction of third party operations onto the F.M.A. area in order to utilize available allowable cut surplus area.

When reviewing average road construction costs, the Review Committee found that claims by third party operators were higher than those claimed by the Agreement holder. Since the Ministry does not have direct contact with third party licence holders on an F.M.A., it is recommended:

Recommendation 3.

THAT THE MINISTRY CAREFULLY REVIEW ANNUAL WORK SCHEDULE SUBMISSIONS WHICH INCLUDE ROAD CONSTRUCTION COSTS UNDER APPROVED THIRD PARTY ARRANGEMENTS.

MAINTENANCE OF PRODUCTIVITY

The Forest Management Agreement obligates the Company to produce successive crops of timber on a sustained yield basis. Table 2 shows a comparison of the Maximum Allowable Depletion during the first five year term of the Agreement and lists the harvest, depletion and regeneration efforts. The Allowable Depletion for the next five year term is also shown. Normally the Allowable Depletion is expected to drop as the overmature portion of the forest is fully harvested or depleted. If the full Allowable Cut is not depleted it will remain at the same or higher levels in subsequent terms.

TABLE 2
Comparison of the 1980-1985 allowable cut, total depletion, harvest and regeneration activities and the 1985-1990 allowable cut. (Ministry Phase-In operations included.)

FOREST MANAGEMENT AGREEMENT NO. 500600

SPRUCE FALLS POWER AND PAPER COMPANY

1980 to 1985

(hectares)

Working Group or Forest Unit	1980-1985 Maximum Allowable Depletion	Total Depletion	Harvest	Regeneration Total	1985-1990 Maximum Allowable Depletion
Jack Pine	4665	2620	2009		4507
Spruce	71555	51522	38795		68682
Balsam Fir	3315	1250	947	N	947
Other Conifer	2830	1369	610	/	2817
Poplar, 2	16105	10244	10121	A	16007
Poplar, 3	5715	1272	1244		5890
Total	104185	68277	51248	27834	101363

SURPLUS

The surplus situation was addressed by the Ministry during the Management Plan analysis. The Company complied with Ministry requests to distribute the surplus under Third Party Licence arrangements.

INTEGRATED RESOURCE MANAGEMENT

Through the Forest Management Agreement, most of the Spruce Falls' roads have been opened to the public. This has provided considerably improved access to the forest for other users, but it has also caused additional problems between users. The Company and MNR work closely to mitigate concerns caused by new access (i.e., Brunswick Lake, Groundhog River).

There is good co-operation between the Company and MNR with respect to integrated resource management on the forest.

During the planned and implementation stages, concerns are

noted by MNR, primarily with road alignment and harvesting operations near water bodies. However, a suitable compromise which protects the concern, and also optimizes timber production is generally agreed upon. There is somewhat less integration with respect to wildlife habitat concerns. Most clear cuts are still larger than recommended for wildlife habitat, however it appears that clear cut size is decreasing. It was encouraging to see that the Company and MNR are working closely to bring former "excluded" lands into timber production by using modified harvesting techniques.

Although the Company does a great amount of chemical herbicide spraying compared to other areas in the province, the percentage of the land base sprayed annually is relatively small and not felt to be significant from a broad habitat perspective. Currently licenced chemicals allow for deciduous growth after several years, thus providing better mixed conifer/deciduous habitat in the medium term.

Important "Areas of Concern" were identified in the Operating Plan. Areas of Concern are geographically defined areas of value to other resource uses or users which could be affected by timber management operations, including roads, and which may require modifications to those operations. Additional areas were identified in annual plans. These are shown on Forest Resources Inventory (FRI) maps in the Company office. Maps for Byng, Puskuta, Abbott, Cromlech, and Oscar Townships were reviewed and field inspections of those townships confirmed general adherence to planned reserves. A recent report provided by MNR (Vandenberg, B. and Hubay, J., 1983. "Shoreline reservation inspection program of the Spruce Falls Power and Paper Management Unit." Kapuskasing District) made a similar conclusion.

Six recently constructed bridges were inspected in Ford, Stringer, Hicks and Oke Townships. Although no judgement

was made as to their engineering suitability, all bridges were environmentally adequate. Little disruption of original stream courses was made and shoreline vegetation was protected as much as possible. Some erosion is occurring in the recently excavated clay banks, but there appear to be no detrimental effects to the water courses.

RECORDS

The Review Committee checked the Company's record keeping in respect to availability, comprehensiveness, reliability and quality. All of the records required under the Forest Management Agreement were available and contained a satisfactory amount of information indicating planned activity and work actually accomplished.

Year End Reports

The Review Committee found a discrepancy between the kilometres of road reported in the 1983/84 year end report and a summary of the road invoices for the same period. There were explanations recorded for the discrepancy and adjustments made but the official record, the Annual Report, remains unamended.

Recommendation 4.

THAT AN AMENDMENT PROCEDURE BE ESTABLISHED BETWEEN THE MINISTRY AND THE F.M.A. HOLDER WHICH WOULD GOVERN MATTERS WHERE THE OFFICIAL ACHIEVEMENT RECORDS MUST BE CHANGED FOR LEGITIMATE REASONS.

No stocking assessment or FTG survey results have been reported for the first five year period of this F.M.A. As explained in this report, a stocking survey program will only be underway later in 1985 when the fifth full growing season has been completed.

A summary of five years of Forest operations is shown in Table 3. A total of 51,248 hectares were harvested, 19,232 regenerated, 35,314 tended and 16,643 site prepared for subsequent regeneration. 424 kilometers of road were constructed and 628 maintained.

TABLE 3
Detailed summary of Company's harvest, silvicultural activities and payments made during the 1980-1985 Operating Plan period. (Ministry phase-in work not included.)

FOREST MANAGEMENT AGREEMENT NO. 500600
SPRUCE FALLS POWER AND PAPER CO. GORDON COSENS FOREST

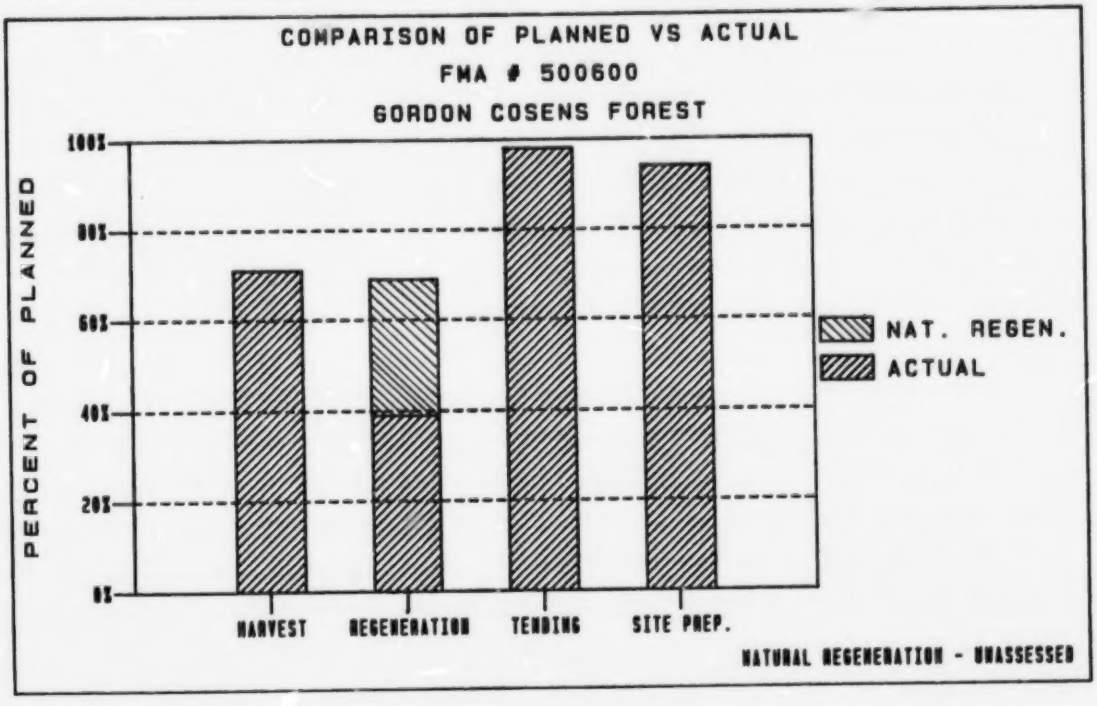
HARVEST CUT: 51248 HA

REGENERATION		HECTARES	DOLLARS (000)
TREATED			
PLANTING i)	BAREROOT	3818	1094.4
ii)	CONTAINER	2397	478.7
SEEDING i)	DIRECT	2521	49.9
ii)	WITH SITE PREPARATION	0	
TOTAL, TREATED		8736	1623.0
NATURAL			
STRIP CUTTING		0	
SEED TREE CUTTING		3723	
CLEAR CUTTING		6773	
TOTAL, NATURAL		10496	
TOTAL, REGENERATION		19232	1623.0
TENDING			
CLEANING, CHEMICAL		0	
AERIAL		35314	1044.4
OTHER		0	
TOTAL, TENDING		35314	1044.4
SITE PREPARATION			
MECHANICAL		15249	2645.0
CHEMICAL		1083	17.7
PRESCRIBED BURN		311	6.5
TOTAL, SITE PREP.		16643	2669.2
ACCESS ROAD CONSTRUCTION AND RECONSTRUCTION		KILOMETERS	
	PRIMARY	353.47	
	SECONDARY	71.10	
	TOTAL	424.57	10968.3 (1)
MAINTENANCE		628.61	259.4
TOTAL			16564.3

* Does not include Ministry Phase-In operations.
(1) Costs not separated.

A comparison of actual forest operations to those planned is illustrated in Figure 1. Seventy-two percent of the planned harvest was carried out. Regeneration, tending and site preparation were 69, 98 and 94 percent of the planned activities respectively.

FIGURE 1
Comparison of the actual levels of harvest,regeneration tending and site preparation accumulated to 1985 and expressed as a percentage of the levels originally planned in the 1980-85 Operating Plan.



The under harvest was due to a downturn in the economy and the deferral of a proposed new paper machine at the mill. The shortfall in planned regeneration was due to the reduced harvest levels and to a temporary reduction in the "group seed tree" method of natural regeneration.The Company also focast natural regeneration on selected winter harvested sites as part of their Operating Plan target.This type of regeneration covered 23,673 hectares but would not be reported until a free-to-grow assessment

Invoicing

A random year was selected for comparing invoices submitted to the Ministry of Natural Resources for road payment against the year-end report. It was determined that the

invoiced amount for road construction and maintenance matched the year-end report. There was one discrepancy as outlined earlier, but a satisfactory explanation was provided in a documented format.

The silviculture record for two separate regeneration projects was checked against the invoiced submission to the Ministry of Natural Resources for payment and was found to be correct in both instances.

Silviculture Information System

The Company is maintaining an adequate number of maps to record both its harvesting and artificial regeneration activities. In addition to the maps, individual project reports containing larger scale maps and project details are maintained in a manual file system. As part of this project report, the Company utilized the Ministry's silvicultual card system.

The Review Committee had no difficulty in obtaining the information requested from the Company during the Review Process. The present system is essentially a manual one, but the acquisition of a micro-computer will make it possible for the Company to produce summaries of its silviculture activities sorted,by a number of variables.

A comparison of the five year mapped harvest cut against the five year Operating Plan allocation was difficult due to the fact that the latter was mapped at the 1" = 1 mi. scale. The former is mapped initially at the 1:15840 scale. Generally the areas appeared coincident.

Company Commitment

Since signing a Forest Management Agreement in 1980, the Company has re-organized its Woodlands Department in order to accomplish its new mandate in forest management. The

Forestry Services side of the organization is responsible for planning the harvest and silviculture follow-up. Logging Services, on the other hand, is responsible for implementation of both the harvesting and silvicultural plans. The change from pre-F.M.A. conditions is that Forestry Services now have greater input in harvest planning to ensure that the results promote proper conditions for regeneration. Staff previously responsible for only harvesting operations now must include the operational considerations associated with implementing a large regeneration program.

Since signing the F.M.A., Spruce Falls has hired three additional foresters and two additional technicians. This does not include the many person-days worked by seasonal foresters and technicians.

Spruce Falls has responded enthusiastically to the challenge of management. The Company's staff have been reorganized in order to respond appropriately to this challenge. Company staff have shown a willingness to consult with experts and establish co-operative projects to assist them in improving their current technical forestry knowledge.

Record keeping appears to be satisfactorily, although the move to an electronic information system should produce greater benefits and an improved efficiency in data base management.

The Company has long recognized the need for a long term wood supply and related economic strategy and has a data bank which is used in the formulation of strategy. The Company is working with the Ministry in exchanging and computerizing the information.

The Company is also concerned with the ongoing spruce budworm situation and its impact on Balsam Fir and White Spruce. The 1980-85 Operating plan was amended to salvage

portions of the damaged timber.

Company Concerns

Spruce Falls raised the following issues to the Review Committee:

1. A concern over the continued use of the Japanese paper pot as a container for greenhouse seedlings. This issue has been voiced by the Company to both levels of the Northern Region field organization. Studies on the impact of the paper container on tree plantation root growth are currently underway in co-operation with the Northern Forest Development Group in Timmins.

2. A Forest Resource Inventory stand listing is currently required to accompany each five year Operating Plan submitted to the Ministry of Natural Resources. This stand listing contains the details by stand number for the five year allocation of timber. The Company indicates that the amount of use for this stand listing does not justify the expense and work involved to produce it. The matter is currently being pursued through the Ontario Forest Industry Association (O.F.I.A.) as part of their input into the preparation of the new Timber Management Planning Manual.

CONCLUSION

The Company has satisfactorily met its obligations and is committed to the continuation of the FMA. It is recommended:

RECOMMENDATION 5.

THAT THE FOREST MANAGEMENT AGREEMENT WITH SPRUCE FALLS POWER AND PAPER LTD. BE EXTENDED FOR A FURTHER TERM OF FIVE YEARS.

RECOMENDATIONS

The following is a summary of the Ministry's recommendations for the operation of the Spruce Falls Power and Paper Company's Forest Management Agreement area as identified throughout the body of the report:

1. The use of Prescribed Burning by the Company as a site preparation technique is encouraged and should be given a high priority for the treatment of upland sites.

2. Continued monitoring, particularly of the 1980-85 period's silviculture prescription results, should receive a high priority if timely decisions are to be made about the adequacy of these prescriptions.

3. The Ministry should carefully review work schedule submissions which include road construction costs under approved Third Party arrangements.

4. An amendment procedure should be established between the Ministry and the F.M.A. holder which would govern matters where the official achievement record must be changed for legitimate reasons.

5. That the Forest Management Agreement with Spruce Falls power and Paper Ltd. be extended for a further term of five years.

APPENDIX A

FOREST MANAGEMENT AGREEMENT
AREA SUMMARY

AREAS OF FOREST MANAGEMENT AGREEMENTS
1985

AGREEMENT NO		TOTAL AREA Sq km
500200	Iroquois Falls Forest - Abitibi Price Inc.	9454.8
500300	English River Forest - Great Lakes Forest Products Ltd.	6264.1
500400	Upper Spanish Forest - E.B.Eddy Forest Products Ltd.	7146.6
500500	Lower Spanish Forest - E.B.Eddy Forest Products Ltd.	6611.1
500600	Gordon Cosens Forest - Spruce Falls Power and Paper Ltd.	16104.2
500700	Spruce River Forest - Abitibi Price Inc.	7523.5
500800	Black River Forest - QNS Paper Company Ltd.	2552.2
500900	Lake Nipigon Forest - Domtar Inc.	6129.3
501000	Nagagami Forest - QNS Paper Company Ltd.	4496.1
501100	Pineland Forest - E.B.Eddy Forest Products Ltd.	3178.3
501200	Seine River Forest - Boise Cascade Canada Ltd.	2690.5
501300	Manitou Forest - Boise Cascade Canada Ltd.	3910.0
501400	Romeo Malette Forest - Waferboard Corporation Ltd.	3564.3
501500	White River Forest - Domtar Inc.	5757.9
501600	Cochrane Forest - QNS Paper Company Ltd.	661.5
501700	Gardiner Forest - QNS Paper Company Ltd.	1056.8
501800	Timmins Forest - QNS Paper Company Ltd.	1894.9
501900	East Patricia Forest - Boise Cascade Canada Ltd.	3237.8
502000	Lake of the Woods Forest - Boise Cascade Canada Ltd.	3274.6
502100	Pakwash Forest - Boise Cascade Canada Ltd.	3977.7
502200	Magpie Forest - Dubreuil Brother Ltd.	3946.0
502300	Trout Lake - Great Lakes Forest Products Ltd.	9758.5
502400	Dog River - Matawin Forest - Great Lakes Forest Products Ltd.	8735.6
502500	Brightsand Forest - Great Lakes Forest Products Ltd.	4365.1
502600	Nakina Forest - Kimberly-Clark of Canada Ltd.	9058.9
502700	Longlac Forest - Kimberly-Clark of Canada Ltd.	10006.8

Total